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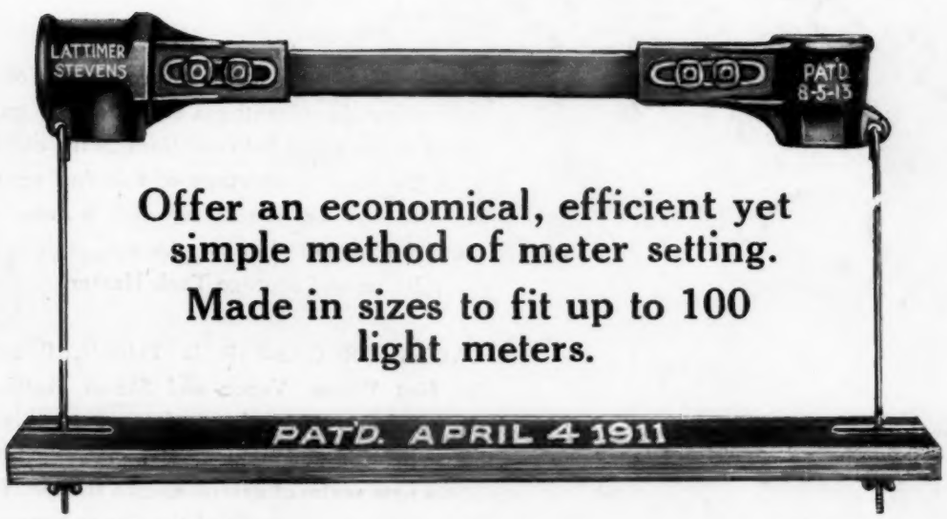

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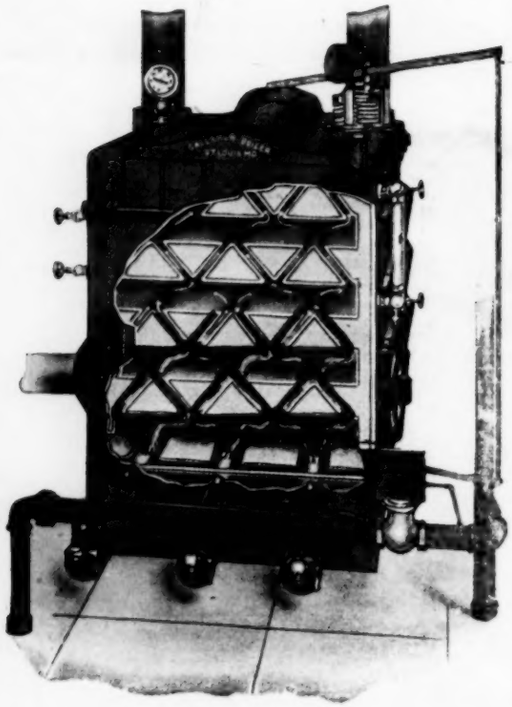

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TO educate the masses to the convenience, cleanliness, economy, wastelessness, safety and all the other virtues of house heating by gas, will take time and patience; but if the start is not made the goal will never be reached.

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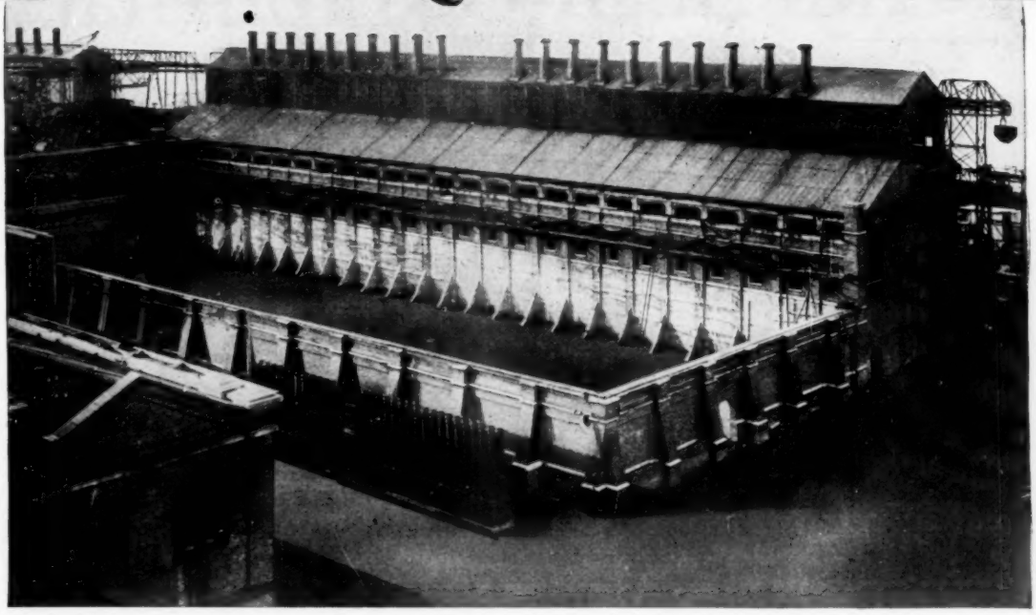

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American Gas Journal

SIXTY FIFTH YEAR

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STANTON G. KRAKE, Managing Editor

ISMAR GINSBERG, Technical Editor

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GAS JOURNAL

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Figuring 30,000 Gas Bills a Day

How the People's Gas Light & Coke Co. of Chicago bills its customers

IT IS not so very long ago that all commercial bills were written with pen and ink, but hand-written bills, like coal burning ranges, are now obsolete; both have succumbed to inventive genius and to the steady march of progress.

The typewriter was probably the first mechanical device used for billing. Next came the addressing machine, for printing names and addresses. Then followed various kinds of machines that would add, subtract, multiply, divide, keep books, figure one's income tax, and perform many useful business operations.

Development of Machine Billing

In the transition from the hand-written bill to the bill made entirely by machinery, a number of gas companies adopted the addressing machines for printing customers' names and addresses. This was a progressive step and it was appreciated by customers, for people are particular about the way we write their names and addresses.

The next foward movement was the use of rubber stamps for entering the gross and net amounts and the discount.

Then followed the use of a machine to print the two meter readings, the date of readings, and the consumption of gas. The machine made the subtraction automatically. Net amounts of bills were typed on revenue sheets (sometimes called register sheets) by a listing machine.

These progressive ideas not only saved time and expense, but improved the appearance of gas bills. However, the objectionable feature was that bills were handled three times to complete the three operations.

Today we have a machine that performs all three operations with one handling of the bills. That's what this story is about.

The People's Gas Light & Coke Company Suggests a One-Line Billing Machine

The Peoples Gas Light & Coke Company of Chicago has kept in step with forward movements for improvement in rendering gas bills. This company has more than 720,000 customers; hence, any proposition for saving time, labor, or expense, is well worth consideration.

Several months ago the "Peoples" Company made tests of various types of billing machines. The results of the tests developed that machine operations, applied to billing, accomplished a saving, but the saving effected by any one of the machines tested did not warrant an investment in new equipment and a change in routine.

Building of a One-Line Machine

After the tests had been completed, a representative of one of the machine companies was asked this question: "Why don't you build a machine that will print all items on one line and at the same time produce a register sheet that will have a better appearance and be easier to check?" And straightway he went and builded one so satisfactory in every respect that it was immediately adopted.

Although the operation of the Burroughs One-Line Billing Machine is simple, and easy to comprehend, one gets a better idea of its adaptability for gas billing by having some understanding of the bookkeeping system employed by a gas company that uses this new method of billing.

Key to Bookkeeping System

On account of the volume of work required to take care of 720,000 accounts and also in order to obviate the confusion that would result in having all bills fall due on the same day, The Peoples Gas Light & Coke

(Continued on page 98)

Increasing Industrial Gas Sales*

A review of the conditions surrounding the Industrial gas business

Henry O. Loebell

Vice-President and General Manager Combustion Utilities Corporation

I DOUBT whether there is anyone present this evening who does not feel that the bright future of our industry is largely dependent upon the greater development of our industrial business.

We are all agreed that from the scientific angle—from the standpoint of its effective utilization—gas is the ideal industrial fuel. The most important factor of each and every heating process is the ability to so regulate the combustion of our fuel that the proper physical and chemical conditions are present at all times for the highest quality standards of production with the minimum of spoilage and at the lowest possible cost. Gaseous fuel, because of its inherent characteristics, allows for the most complete realization of this consideration of "control," and for this reason it is the fuel that the industrial world needs.

While it is generally acknowledged that central station gas is a very desirable industrial fuel from the scientific standpoint, we all realize that the great limitation under which we are operating today is the important factor of cost. At this point, our problem of increasing industrial gas sales divides itself into two parts. The first is to accept conditions as they are, to accept the economic situation as it is, and by the establishment of industrial sales departments, by the training of industrial gas men, and by publicity, etc., to endeavor to get that part of the industrial business which is available on a competitive basis with gas at its present price in comparison with the cost of other fuels.

However, our bigger problem by far is to realize and recognize the limitations surrounding the further development of our industrial business—to analyze the conditions under which our gas companies are now operating and to determine what changes will have to be made if our gas utilities are going to be important factors in serving the industrial world.

Industrial Gas Service the New Function of Our Industry

The function of the central station gas company is changing. Originally, when the gas company was given a franchise, its purpose was to supply domestic service to the residents in that community. Working on this basis, it has always been the aim of the public service commissioners and the aim of the various gas company officials to primarily consider the needs of the domestic customer, and only in a very secondary manner give some attention to supplying the needs of the local manufacturer.

Generally speaking, our gas companies have been successful in fulfilling this function. They have apparently sold their commodity at a price which has been acceptable to the domestic customer and their business has expanded in proportion to the gradual growth of the cities in which they operate.

However, if our gas companies are to become dominant factors in the industrial field, they must alter the operating characteristics of their business, so that they can serve the manufacturer with the same effectiveness and efficiency as has been done in the past with domestic consumers. Like every other business, a change in function necessitates a change in business methods, and before we can make much progress in increasing industrial gas sales we must give consideration to correcting those limitations which exist at the present time.

The Price Question Is Important

As industrial gas men, the problem we are up against is to cut the price of the commodity we are selling so that it will compete with the various solid and liquid fuels in use at the present time. To do this is not nearly as dfficult as most of us think, because the present selling price of gas is simply a result of several limiting factors which in turn are tangible and workable problems which can be solved if we give the proper thought and consideraton to our objectives.

Surprising as it may seem, it is not only possible but it is evident that gas can be profitably supplied for industrial purposes at the price of only 20 to 35 per cent of what it is today, if we consider our activity from the common sense viewpoint and remove those limitations and make those changes which appear logical and desirable.

Gas Company Must Give Service to Industry

Before any considerable progress can be made it must become generally recognized that the function of the gas company is no longer that of just supplying domestic service, but that the central station gas company's purpose is to give the industrial man service just as well as the domestic customer. Today when a gas company is given a franchise, not only should the domestic customers be considered, but the city should primarily consider the requirements of the industries in the community.

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*Delivered before Gas Sales Association of New England, January 11, 1924.

In the granting of the franchises, the representatives of the industries should have just as much, if not more, to say as the representatives of the residents of the town, because, after all, the community is simply the result of the local industries within its boundaries. In other words, generally speaking, a community is built up around the industries functioning in that territory and the purpose of the gas company should be to supply a fuel service to the industrial plants as well as to the domestic customers in that community.

The Gas Utility and the Public Service Commission —Lower B. T. U. Gas

The entire relationship between the public service commission and the gas company should be on the basis that the function of a utility is to give both adequate industrial and domestic service. Furthermore, the purpose of a public service commission should simply be to see that at all times the utility operates with the highest possible efficiency and supplies adequate service at the lowest possible cost. The gas company should be responsible for the technique of its own business and should be allowed sufficient leeway to at all times make those changes which will allow it to supply the best service at the lowest possible cost.

Artificial Limitation of B. T. U. Standard

Perhaps the best illustration of the need for such a relationship is that made evident by the present unfortunate limitation placed upon most of our gas companies in having to supply gas of a defintie heating value standard. There is no reason for this. A customer, whether domestic or industrial, can obtain at least as good service with a 400 or 450 B. T. U. gas, and at the same time the cost of manufacturing this gas will be less to the company, and, therefore, less to the consumer. Today, because most of our utilities have to manufacture a gas of 550 to 600 B. T. U., they necessarily have to buy high-grade coals and other materials.

In many of the states of the Union companies are bringing their coal 500 to 600 miles when they have, practically speaking, at their back door large available supplies of coal, simply because a high B. T. U. gas has been prescribed by the commission.

Heating value standards are entirely unnecessary, and the sooner our gas companies are freed from this serious limitation the sooner we shall be able to reduce the cost of our commodity to the customer and begin to expand our industrial business.

Cheaper Industrial Gas by Correct Rates

The second great problem confronting us is that of rates. Today I know of no method of selling which is more inequitable, more discriminatory and more detrimental to the expansion of our business than the system of rates under which we are forced to sell our product. The average gas company with its present system of rates loses money on the higher salaried business or professional man who perhaps lives in a small apartment and has a small family and has many of his meals away from his home. On the other hand, the revenue that the company receives from the laboring man who has a large family is much more than that particular customer should pay.

The industrial consumer invariably pays a price for the gas he uses which is far in excess of what it costs the company to give that service. In other words, there is no equitable ditsribution of the costs involved in giving service to the various customers that the gas company has on its lines. Some customers pay too little; some pay too much; others are asked a price which is so excessive that they cannot afford to use the service of the gas company and have to resort to less efficient and less desirable fuels.

Certainly there can be no doubt but that the only fair method of selling service is to charge each customer in proportion to what it costs the company to give him service. In other words, the price that the gas company should charge the customer for the gas he purchases should be such that he pays the cost of supplying that service plus a fair and reasonable return on the investment. It should be neither more nor less than this amount.

The Three-Part-Rate as a Proper Industrial Rate

In order to work out such a method of selling our product, we necessarily have to analyze our cost records. When we do this, we find out that the various factors of costs can be divided into three main divisions.

The first of these can be called the "customer cost" and represents those expenses which are due to the fact that each customer has a meter to be read each month, that bills are to be made out and that a general office must be maintained to do all this work—keep his account, etc.

The second cost factor may be called the "demand cost," and, generally speaking, represents that cost item which is occasioned by the gas company being ready at all times to supply the maximum demand of the customer.

The third expense is that of manufacturing the gas and distributing it to the customer, and may be called the "commodity cost." It is proportional to the amount of gas that the customer uses.

Allocation of Costs to Each Item in Three-Part Rate

Considering these three charges, we have what is called the three-part rate, which has been treated very completely by the Rate Structure Committee of the American Gas Association, during the past three or four years. I have in mind the report of the Rate Structure Committee of the year 1922. In this report examples were given of different sized companies, showing the various allocation of costs to each of the three items of the three-part rate.

An analysis of these companies shows that, generally speaking, the total expense of a large company can be approximately distributed as follows:

25 per cent customer cost.
25 per cent demand cost.
50 per cent commodity cost.

With the smaller companies, the allocation of these cost factors is more in the neighborhood of one-third of the total expense to each of the three items.

Working on a basis of these figures submitted, we can readily see that where the gas company has a large industrial consumer with a good load factor, the items of "customer cost" and "demand cost," in proportion to his total bill, becomes very small and therefore the cost of gas to this customer will run only slightly in excess of "consumption cost," which represents only half of the total expense of the company in supplying service to all of its customers. In other words, if a company is selling its product at a price of $1 per thousand today, it could readily afford to supply a large industrial consumer with a high load factor at a price of 60 cents or 65 cents per thousand cubic feet, or just a little more than the "consumption cost."

Rate for Industrial Customer of Smaller Companies

With the smaller companies the rate of the large industrial customer with a good load factor, would be even less, and would represent only one-third of the average domestic rate. In other words, with the smaller companies, and a domestic rate of $1 per thousand, the rate to the industrial customer would be as low as 40 cents or 50 cents per thousand.

We can all realize that if we had such a system of rates, and we were in a position to offer our product to the industrial man at a price ranging from 40 cents to 65 cents per thousand cubic feet, we would be able to sell our product to a very considerable portion of the available industrial business in our various communities. We must all come to realize that this is the only fair and rational system of rates, and that we must eventually come to it, if our business is to grow and prosper and function in the manner that it should.

Justification of Three-Part System

Certainly we have no more concrete or better example of the logic and justification for such a system of rates than the practice of our present electric public utilities. The electric companies have seen not only the fairness, but also the necessity for such a system of rate structure, and, generally speaking, we find the average electric utility selling its product to the industrial customer at a price representing only 15 per cent or 20 per cent of the domestic rate. This method of doing business is not a matter of opinion or policy, it is a matter of differentiating between the right and the wrong. There is little doubt but that the electric industry would never be where it is today if it had not worked out a proper system of rates, and I venture to say that the bulk of our electric companies would go into bankruptcy if they attempted to develop and carry on their business along the lines our gas companies are endeavoring to enter the industrial field.

As far as rates are concerned, there must be a change. We shall never get very far in entering the industrial field if we endeavor to sell the industrial men our product at a price representing 70 per cent to 100 per cent of the domestic rate. Such a price is too high to compete with the lower priced industrial fuels on the market, and before we can make the progress that we should in giving the manufacturers service we must convince the managements of our various gas companies to install more rational and equitable systems of rates.

Cheaper Industrial Gas by Lower Cost of Gas Manufacture

The next major problem that confronts the greater development of our industrial business is that of manufacturing our product at a lower cost. When we realize that we have practically made no advancements in our methods of gas manufacture since the inception of the industry, we can only begin to understand that there must be cheaper and better ways of manufacturing gas—not necessarily manufacturing a gas of 600 B. T. U. value, but manufacturing a gas which will give both the domestic and industrial customer the best service at the lowest possible cost.

Now such methods of manufacture are fast becoming a reality. During the past five years millions of dollars have been spent by many of our large commercial organizations in working out a new and better method of manufacturing high grade gaseous fuel from our low grade coal resources, and I venture to say that within the next few years our gas companies will have the opportunity of utilizing methods of gas manufacture which will reduce the cost of gas in the holder at least 50 per cent of what it is now.

Making Low B. T. U. Gas Has Been Permitted

Even as things are today, the gas company can greatly reduce the manufacturing cost of its product, if it is allowed to utilize the coal resources nearest at hand, and, perhaps, thereby make a gas of a 400 or 450 B. T. U. value.

We are coming to this. Reecntly the State of Colorado eliminated heating value standards and several of our other states have this matter under consideration at the present time. We can readily realize to what extent the gas company can reduce its cost of manufacture if it can use a cheap local fuel instead of having to purchase a high grade fuel from a distant field and pay $3 or $4 freight charges per ton of coal.

This general problem of cheaper gas manufacture is fast becoming a reality, and by progress along the lines of elimination of heating value standards and the adoption of newer manufacturing methods, we, as industrial men, can look forward with assurance to the time, in the not distant future, when the gas

company can put its gas in the holder at just one-half of what it costs today.

Industrial Gas at Only One-fifth the Cost of Present Domestic Prices

Now just let us review some of our cost factors. With the correct system of rates, the industrial rate should be from one-third to one-half of the domestic rate. If we are able to reduce the cost of gas manufacture by one-half, we can readily see the possibility of selling our product for industrial purposes at a price amounting to only one-quarter to one-sixth of our present domestic rate.

Let us assume that the average cost of supplying the domestic consumer is in the neighborhood of $1.25 per thousand cubic feet or $2 per million B. T. U. An industrial rate representing only one-fourth to one-sixth of the domestic rate, would mean a cost per million B. T. U. of from 35 cents to 50 cents. At such a price, our product is easily competitive with all other available fuels, and it offers us the opportunity of making central station gas a universal fuel, displacing solid and liquid fuels for all purposes, both domestic and industrial.

The Value of Better Furnaces and Appliances

The greater development of our industrial business is also largely dependent upon our having better equipment for the utilization of our product. It is a fact that the success the electric companies have had in selling their product for industrial purposes has been largely due to the fact that they have developed furnaces and equipment which have been able to fully capitalize upon the inherent values of electric energy and have resulted in lowering the costs of industrial production, in spite of the fact that the electric energy costs five to twenty times more than the other fuels available.

During the past few years the work that has been done in improving gas furnaces and gas appliances has been very encouraging, and even today, with the present high prices for industrial gas, we have an opportunity of getting a considerable amount of industrial business, due to the better utilization equipment that we have available. The need for better and more efficient furnaces is recognized and our large furnace manufacturers are making splendid progress in this work. It is only a question of a few years when there will be on the market gas-fired furnaces and appliances which will allow us to realize upon all the inherent values of gaseous fuel, and put us in the position where we can enter competitive markets just like the electric furnace has done, even though our gas is somewhat higher in price than the more crude, relatively inefficient and cheaper fuels.

Salesmanship—Organization—Men

Organized salesmanship is our greatest need. By this I mean many things, including properly organized new business departments, industrial gas departments, men qualified to represent the gas companies as industrial gas salesmen, general publicity, involving the acceptance of the proper ideals by the gas company officials, the public service commissions, the industrial world and the public.

Of course, if we are to be active in the industrial field, we must have the organization—the men—to carry on this work, and I venture to say that the success we make in expanding in the industrial field is going to be largely dependent upon the quantity and quality of trained men we have available to carry on this most important work.

I know of no business activity that offers the opportunities both from the standpoint of rendition of service and general personal aggrandizement that the industrial heating field does. The greatest need of the industrial world today is better ways and means of performing heat operations, and in this connection the industrial gas salesman has before him a career second to none.

In preparing this address I have been requested to say something concerning the training of the industrial gas salesman. Being connected with an organization engaged in practically every phase of public utility operation, I have had the opportunity during the past several years of studying the industrial heating field from a great many angles, of coming in contact with practically every phase of industrial activity, and I shall try to make a few suggestions which I hope will be helpful in clarifying our problem of training personnel both from the standpoint of the gas company and the manufacturer.

Training the Industrial Gas Salesman

Of course, the first requirement of a good industrial gas salesman is a foundation of the business—a knowledge of the technique involved, an understanding of the various fuels available, their economies, the technique of their combustion, and the factors that affect the efficiency of utilization of different fuels.

The most important requirement is to know the details of the various industrial processes, to know what their objectives are, and to know all the various idiosyncrasies of operation, so that when an industrial gas salesman approaches the manufacturer he is in a position to talk his language. He must understand the economics of all industrial fuels available, he must know primarily the limitations and disadvantages of liquid and solid fuels, so that he can capitalize these points in selling our product on a competitive basis.

The efficient industrial gas salesman knows all about the best gas fired equipment available for each and every heating operation. He is acquainted with and realizes the values of all the auxiliary furnace equipment available, such as proportional mixing devices, pyrometers, automatic temperature control, etc. He has at his finger tips a complete knowledge of the inherent values of gaseous fuels and is able to bring out most forcefully the value to the customer of the splendid and efficient service the gas company can render in assuring him a definite supply of fuel at all times.

Sales Policies

One of our errors in the past has been that we have not adopted a sales policy which was sufficiently flexible to be acceptanble to all classes of industrial customers. It is an easy enough matter to approach a large industrial customer who can readily obtain funds through his banking connections and sell him a piece of equipment which will show a rate of return of 15 per cent or 20 per cent on the investment.

The problem is an entirely different one, and much more difficult, with the small manufacturer, who has not such favorable banking connections and necessarily has to dig down into his own pocket every time he wants to increase his plant investment. With this man we must clearly point out the savings that will accrue from the purchase of the equipment and work out some sort of a sales policy so that he can pay for this equipment out of the savings created. In other words, with the smaller manufacturer we must adopt to a large extent policies similar to the ones we have instituted in the sale to domestic customers, i. e., selling the equipment on the installment plan over the period of six to twelve months, simply billing the customer for each installment with his monthly gas bill.

Vision Is Our Greatest Need

So far, the suggestions made have been of a defintie or tangible nature. While they are necessary to the proper training of the industrial gas salesman, there is one requirement which I believe is of the utmost importance, in fact, it is vital. That is vision.

I have seen more industrial gas salesmen start out in their business with all the enthusiasm and energy that any man could have. After they had been operating in their territory for a short time they became so engrossed with the limitations of their business and the relative high price of gas in comparison with the cheaper competitive fuels, that they automatically became narrow in their vision and accepted the fact that their opportunity was extremely limited and simply covered a very small percentage of the industrial business, such as hotels, restaurants and very small manufacturing plants where the cost of fuel is a cost factor of only minor importance.

While all these limitations have been facts, there has been no justification for the detrimental results that they have produced on the temperament and disposition of the salesman. All this has been due to a lack of vision.

Industrial Man Must Thoroughly Understand Problem

Our industrial gas men must have a complete understanding of the problem. They must see that, while we are burdened with limitations at the present time, these limitations are only temporary, and that we are slowly but gradually working them out. They must realize that the gas industry is destined to perform a function second to no other industrial activity. Our field covers each and every heat requirement and it is only a question of working out our problems before we can all enter on the final realization of our ultimate functions.

Not only is such a mental attitude absolutely necessary for the ultimate success of our business, but it is also of considerable value in making sales at the present time. While it is not always possible to sell our product on the basis of the tangible evidence in hand, the progressive gas salesman is often successful in selling gaseous fuel on a basis of what we might call its intangible value. Even though the city gas may be a little more expensive than some of the other fuels, the manufacturer is often sold on gas, when he has explained to him full details of the assurance of continuous supply, the service the gas company can render, the achievements being made by the gas companies in better rates, better utilization equipment, cheaper methods of gas manufacture, and the general assurance that as time goes on the price of central station gas will decrease rather than increase. In many cases a sale can be made by selling the intangible.

Gas the Ultimate Fuel—Our Problems and Opportunities

Just a word in review. The problem of developing our industrial gas business divides itself into two parts.

The first is to work with the tools we have today—to accept the present prices of central station gas, the gas furnaces and appliances on the market, the general need of the manufacturer for our service. On a basis of all these conditions, we must build up new business departments, industrial heating departments, train and develop good industral gas salesmen, and carry on educational and publicity work of all kinds, so that we can have the men, the organization, and the objectives to go out and get that portion of the industrial business that is available today.

I want to assure you that the industrial business that can be obtained today is very large in proportion to the present activities of our gas companies, although this portion of the business represents only a small part of the entire field which will ultimately be available to us.

Our second problem, and by far our bigger problem, is that of planning for the future, of having the proper vision and correct perspectives of our ultimate function. We all have the obligation of making clear in our own minds the advantages that will accrue to our business by cheaper methods of gas manufacture, better utilization in equipment, more rational rates, and more common sense legislation and regulation. If we have a clear conception of what these things will mean to the greater development of our business, if we can see their value and importance, and the fact that they are all conditions which can be and are being worked out, then we should make an endeavor to sell these ideas to the

(Continued on page 109)

A Bright Future for the American Gas Industry*

P. S. Young

Vice-President Public Service Gas Co., Newark, N. J.

WHAT of the immediate future of the gas business?

First we must examine the recent economic changes which have affected it.

We have seen a marked increase, an almost revolutionary increase, in prices of all commodities. Also a similar increase in wages. Costs of all raw material as well as manufactured material have greatly increased. The gas business has adjusted itself to these changes by the most stringent economies in production and distribution and by trespassing on its margin of reserve capacity in order to put off additional capital expenditures as long as possible. During the war and post-war period its business promotion activities have been restricted to replacement work rather than development work.

Conditions Shaping Themselves to Eliminate Unprofitable Customers

These conditions bring in their train opportunity. The gas business needs men to grasp its opportunities; it needs capital with which to meet the new demands that must be created. There has been a class of gas consumers created by the conditions I have spoken of. Convenience has a far greater value than ever before on account of the higher cost of domestic service. The market for gas in domestic service on account of this has been greatly widened. There should be little excuse in the years to come for the existence of the unprofitable small consumer. The relatively high wage scale puts the means of larger consumption in the hands of the industrial worker.

The competition of coal for domestic use other than house heating is less severe and is fast disappearing. Auxiliary house heating will, I believe, bring an improvement to the load factor. The problem of supplanting coal and oil for house heating with gas has still to be mastered, but the conditions now existing put it in reasonable range of accomplishment. It may call for changes in plant and distribution investment and in manufacture before much advance in this direction can be made.

The greater cost of construction now present naturally makes us turn to ways and means of more complete use of the investment. The future development of the business, therefore, largely turns upon that problem.

Industrial Business Opens Up Great Potentialities

Diversity of use and larger use of the customer's demand is the desideratum. The uses of gas for industrial purposes must be greatly widened. Without doubt, some form of demand rate is required to properly saturate this field in addition to the most expert salesmanship and development of proper appliances.

The gas business is fortunate indeed that during these years just past it has laid the foundation of future prosperity by facing its economic problems courageously and wisely. It has adjusted itself to regulation and has met its obligations to the public honestly and painstakingly. We have the heritage of a sound industry, an attached business, and a market is now opened to us that even in our wildest dreams before the war we never thought possible. Let us so conduct ourselves in promoting the interest of our customers and our industry that we do not fall short in our efforts to make the most of these possibilities and advantages.

*Delivered at the mid-year meeting of the New Jersey Gas Association, January 23, 1924.

GAS BUSINESS IN 1923

Sales of manufactured gas during 1923 by the public utility companies of the United States will run between 365 and 375 billion cubic feet, according to preliminary estimates made public today by the American Gas Association. This establishes a new high record for gas consumption and represents an estimated increase over 1922 of about 20 billion cubic feet.

At the present time, the association reports, new customers are being added to service mains at a rate in excess of 400,000 a year, with annual sales of appliances aggregating 750,000 ranges, 425,000 water heaters and 400,000 space heaters. Sales of merchandise by gas companies is also continuing at a high rate, the estimate for least year being in the neighborhood of $45,000,000, or approximately $5 a meter.

One of the principal factors responsible for the greatly increased sales of gas is the growing demand for the product in industry, where, according to the association, gas is now used in more than 5,000 separate and distinct ways, with an increased consumption during the last ten years of 1,000 per cent. Companies are also making house heating installations at the rate of about 10,000 a year and in some sections of the country are making a large number of gas refrigeration machine installations.

In order to keep up with the present and accumulated demands for service, the gas utilities financed a $450,000,000 building and expansion program in 1923, the association says, and this sum is expected to be materially increased in 1924. Reports filed with the association by its members show that the industry is enjoying the greatest expansion in its history, with the new year promising no let-up in demands for service.

Saving Money in Our Boiler Rooms*

How this was accomplished in the power plants of a large gas company

H. H. Harris

General Superintendent of Manufacture, Public Service Gas Company

EVERY Works Superintendent carefully follows up his generator fuel and oil efficiencies, as he knows fairly closely what his results should be.

In the boiler room, however, it is not at all obvious as to what his bogie is, as the boiler fuel consumption depends on the type of steam using equipment in use, as well as the boiler room conditions. Consequently, there is liable to be a feeling that the boiler fuel costs are necessary for that particular location, and that little can be done to improve that item of holder cost.

A saving in boiler fuel of a pound per thousand is now worth nearly as much as a pound saved in our generator fuel, and probably will be much easier to obtain.

In checking over our 1922 costs, the comparison of the boiler fuel at four of the larger works of the Public Service Gas Company, which is given below, suggested that there were large possible savings at some of our works:

1922 Boiler Fuel per M.

Works.	Lbs. per M.
A	12.60
B	17.46
C	14.76
D	16.34

Comparison of Results.

The comparison of A and B works showed a difference of 4.86 lbs. per thousand against B works. We made a detailed study of the equipment and operation of B works, which showed that we could save all of this coal, by replacing a number of large steam pumps with more efficient modern equipment, and by making some other changes in the details of operation of the boiler house and maintenance of the large steam users.

This work, as outlined later, got well under way during the summer of 1923. The same campaign was followed up in our other works, but without important changes in the steam using equipment.

In a few weeks the boiler fuel used began to drop at all our works, and particularly at B works, which had been using about 17 lbs. per thousand. In June they used 15.4 lbs.; in August, 12 lbs.; dropping down to 10.50 lbs. in October and 10.2 lbs. in November.

The results for the four works in October were as follows:

*Delivered at the mid-year meeting of the New Jersey Gas Association, January 23, 1924.

October, 1923—Boiler Fuel

Works.	Lbs. per M.	Reduction Over Oct., 1922.
A	9.41	2.77 lbs.
B	10.50	6.47 "
C	11.98	4.03 "
D	10.84	8.75 "

All our works have hand fired B. & W. or Heine water tube boilers with low settings. There has been some labor saved, as B works now operates with two less boilers.

I have outlined briefly the program which we followed:

Steam Production

To improve boiler room operating efficiency:

1. Keep heating surfaces clean inside and outside. Use a standard method of scale prevention and clean tubes as often as necessary.
2. Improve supervision of firing conditions and watch draft regulation.
3. Stack temperatures and flue gas analyses taken as part of the daily routine.
4. Keep baffles and boiler settings tight.
5. Insure that feed water heater maintains proper feed water temperature.
6. Select the fuel available at lowest cost per B. T. U. and install grates suited to the fuel used.
7. Properly insulate all exposed steam and hot water pipes.

Steam Utilization

To stop steam losses:

1. Insulate all eposed steam mains and pump cylinders. Cut off all dead steam lines. Test all steam valves for leakage.
2. Make frequent internal examinations of all steam using equipment, especially pumps, and keep them steam tight. This inspection to include the water ends of all pumps, which will need the most attention. Take indicator cards on all steam engines at frequent intervals to check valve setting.
3. Insure that the cylinder oil used is giving proper lubrication.
4. Check up the amount of steam used in the generators.
5. Make weekly inspection of the steam traps.

This work can only be described very briefly here, but very valuable detailed information can be found in the Report of the Committee on Power Economies in Gas Plants. A. G. I. Proceedings of 1913, Part 1.

(Continued on page 109)

GAS MERCHANDISING

Domestic – Industrial

Your Windows and Color Effects*

As to the value of window displays, a prominent trade journal gives some interesting figures as follows:

No. Inhabitants.	Number Passing Window in 12 Hours.
1,000	178
2,000	356
3,000	534
4,000	712
5,000	890
10,000	1,780
15,000	2,670
20,000	3,560
25,000	4,450
30,000	5,340
35,000	6,230
40,000	7,120
45,000	8,000
50,000	8,900

While, of course, there is a tremendous "waste in circulation" with the window advertisement, there probably being not more than 10 per cent of the daily passers-by who can be considered as logical purchasers, still the comparison is sufficient to estimate the possibilities of an attractive window display.

At the same time it has been ascertained buying crowds are concentrated in given hours, and that between 3 and 5, and 7 and 9 p. m., a very high percentage of the passers-by may be classified as window shoppers.

Obviously, therefore, something unusual is required to attract the attention of the passer-by and to create an impression sufficiently strong to overthrow the multitude of things that force themselves upon his attention during the day.

The evening window, on the other hand, does not require this attention-getting feature so strongly.

Here are some suggestions relative to the use of color combinations:

*From the Grid.

Orange red with yellow.
Violet with yellow.
Violet with yellow-green.
The following make good combinations:
Scarlet and turquoise.
Violet with orange-red.
Violet with orange.
Violet with blue-green.
Turquoise with orange.
Orange with blue-green.
Orange-yellow with purple.
Yellow with purple.
The following make strong combinations:
Normal-red with blue-green.
Normal-red with green.
Scarlet with green-yellow.
Purple with normal-green.
The following make fair combinations:
Orange-red with purple.
Orange-red with yellow-green.
Orange-red with green-yellow.
Orange-yellow with turquoise.
Orange with green.
Scarlet with green.
Normal-red with green-yellow.
Purple with blue-green.
The following make poor combinations:
Yellow with normal-red.
Yellow with scarlet.
Yellow with turquoise.
Yellow-green with purple.
Normal-green with scarlet.
Normal-green with orange-red.
The following make very poor combinations:
Blue with blue-green.
Blue-green with yellow.
Blue-green with green.
Blue-green with yellow-green.
Blue-green with turquoise.
Normal-green with turquoise.

Turquoise with green-yellow.
Green with orange-yellow.
Orange with purple.
Violet with normal-red.
Violet with scarlet.
Red (of any kind) with pink.

Not only are these adapted to window displays, but are in addition valuable to the man who is planning coloring for advertising generally or for his department.

FIGURING 30,000 GAS BILLS A DAY

(Continued from page 89)

Company divided its customers' accounts into twenty-one groups, called districts. Each district is operated as a separate unit; thus, a nearly equal number of bills fall due on each working day of the month, excepting Saturdays, when the working hours are from 8:30 a. m. to 1 p. m. The twenty-one districts are distributed over 140 ledgers. Each district contains about 33,000 meters. Each ledger has about 500 meters to a district.

Work Must Be Done Every Day on Bills

Successful operation of the company's system for keeping customers' accounts requires that an equal, or nearly equal, amount of labor be completed every working day except Saturdays. Every day about 30,000 meters must be read and the same number of bills prepared and sent to customers. Every day about 30,000 bills fall due. Payments must be received and credited on 140 ledgers. Every day a district must be balanced. Every day delinquent accounts must be listed for the Collection Department.

Failure of any one department to complete its 30,000 operations in a day would cause havoc to the continuous billing scheme. It would be difficult to "unscramble" the jam that would ensue. That old, fallacious aphorism, "It can't be done" has no place in these correlated operations. Thirty thousand bills must be figured every day.

Addressing the Bills

Customers' names and addresses, and the ledger number, page, and folio of the account are embossed on metal plates. Plates are kept in steel filing cabinets until the scheduled time for addressing bills for each district. The plates are then inserted in an automatic machine called the Addressograph. Items on the plates are transcribed on the bills and coupon, in typed form, at the rate of 60 to the minute. After performing this operation, the machine stacks the plates in regular order for filing.

Under the former system of billing one group of operators entered meter readings, dates of readings and consumption of gas on the bills by means of subtracting machines; another group entered the gross and net amounts of the bill and the discount by means of rubber stamp imprint; a third group entered the net amounts of bills on register sheets by use of listing machines.

Billing Operations Explained in Detail

With the new system, all three operations are combined in one. The bill stampers have been eliminated and the company is enabled to send out its bills two days earlier, after meter reading, than heretofore. By looking at the charts one sees how the three operations have been combined in one.

Figure 1 is the meter reading sheet. Note that the readings for the previous month (884) and the current month (914) have been entered on this sheet by the meter reader.

Figure 2 is the ledger account. Observe that the bookkeeper has entered the meter reading for the current month (914) in the "index" column, the consumption of gas (30) in the "register" column and the net amount of the bill ($3.20) in the "amount" column.

Figures 3 and 4. Figure 3 is the gas bill laid over the register sheet (Figure 4) in order to show the manner in which a one-line bill is made, and the items on the bill copied on the register sheet at the same time by using carbon paper. Here is where the new billing system begins.

The New Billing System

The operator places a register sheet (Figure 4) and a sheet of carbon paper in the machine. The register sheet and carbon paper revolve on a platen and remain in the machine until seventy-five bills have been printed and copied on the sheet.

Before the operator touches the keys she compares the name and address on the bill with the name and address on the meter reading card. The next operation is to drop the bill into the chute at the top and back of the machine. The chute is so adjusted that the bill falls into correct billing position at once. This is an important feature which contributes to the speed of billing.

Keep in mind that first, a register sheet is in the machine; second, this sheet is covered with a sheet of carbon paper, and third, a bill has just been dropped into the chute and placed in position over the carbon paper. Everything that is typed on the bill will be copied through on the register sheet in proper position. By watching the arrows in Figure 3 and the circles in Figure 4 on the chart it is a simple matter to follow each operation.

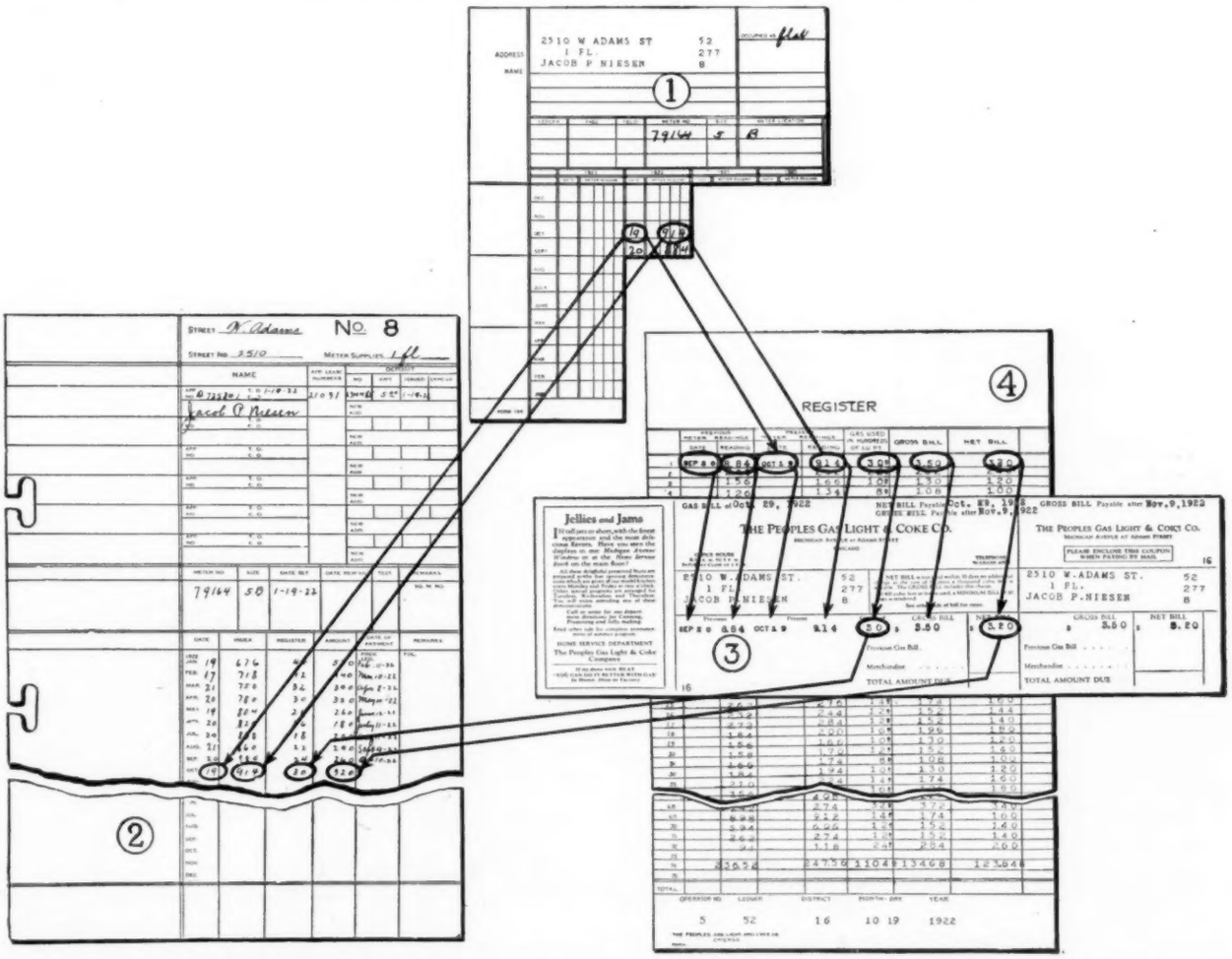
How to Operate Machine

Now imagine that you yourself are manipulating the machine. Meter reading sheets (Figure 1) are stacked on the table at the left of the machine and

in proximity to your left hand. Look at the top sheet for the previous and current meter reading dates. Press the keys for Sept. 20 and Oct. 19; then the keys for the last month's meter reading, 884, and this month's reading, 914. Now strike the operating bar at the right of the keyboard, and while these items are being imprinted on the bill and the carriage is moving to the next position, make a quick mental subtraction of 884 from 914. When the machine comes to a stop, press the key for 30, which represents the amount of consumption, 3,000 cubic feet. Now strike the operating bar again. This operation will imprint 30 on the bill and move the carriage to the next position; namely, the gross amount. Press the keys for the gross amount, $3.50, then the net amount, $3.20. *See note below. Strike the operating bar again and these amounts will be imprinted on the main portion of the bill. The carriage will automatically move over and print the same amounts on the coupon. At this point the carriage, having reached the end of the line, automatically moves back to its original position and the register sheet moves up one space.

Remove the bill from the machine and turn it face down on the table at the right. Turn the meter reading sheet face down at the left side of the machine. You and the machine are ready for the next bill.

After seventy-five bills have been printed and copied on the register sheet you press a total key and strike the operating bar as many times as there are columns to be footed excepting the consumption column. This operation registers totals at the bottom of the register sheet. The machine is then cleared and another register sheet inserted.



*Net amounts for every cubic foot consumption unit, from 200 ft. to 100,000 ft., are listed in tabulated form on a small printed chart mounted on the left side of the machine; but an operator soon becomes so expert in remembering these combinations that she seldom refers to the chart. The gross amount of the bill is calculated by adding one cent per hundred cubic feet, to the net amount.

Example: net $3.20 plus consumption 30 = gross $3.50.

Register sheet totals are proved by totaling the column "gas used in hundreds of cubic feet" and adding this total to the total of the "previous meter reading" column. The sum of these two amounts should equal the total of the "present meter reading" column.

Example:	Previous reading, total,	23652
	Gas used, hundreds of cu. ft. total,	1104
	Present reading, total,	24756

Net and gross amounts are proved by adding the total of consumption, in hundreds of cubic feet, to the total net amount. The sum of these two amounts should equal the total of the "gross amount" column.

If there is a discrepancy in any of the columns, the entire register sheet is re-footed and checked for errors in subtraction or any other amounts entered incorrectly by operators.

Agreeable Working Conditions

Twenty-three girls are employed by The Peoples Gas Light & Coke Company of Chicago as billing machine operators. Their hours are short, the pay is good, and the environment pleasant. They work in a large, well-ventilated, daylight room. The room is equipped with a noise-deadening ceiling.

Machines are power driven; consequently, manual labor by operators is not fatiguing. The slightest touch on the key will cause the machine to register. The average number of bills completed by each girl per hour is 200. Some complete between 225 and 250 an hour.

The new one-line billing machine is accurate, efficient, dependable, and economical. It is the most important factor in Figuring Thirty Thousand Gas Bills Every Day.

GAS COSTS INCREASING

The rapid increase in the cost of wages and materials entering into the manufacture and distribution of gas service within recent years is shown in the latest statistical abstract issued by the United States Department of Commerce.

For the year 1914 the Government reports the wage item in the industry as $26,800,000. In 1919 it had jumped to $52,700,000, or approximately twice as much as it was five years earlier. In 1921 it was $63,300,000, representing a two-year increase of $600,000, and an increase between 1914 and 1921, a seven-year period, of $26,500,000. Since 1921 wages for all classes of labor in the industry have been on the climb, and there is no expectation of a decline during 1924.

The cost of materials used in the gas business has also shown a great increase, according to the Government. In 1914 the figure was $77,000,000. Five years later it had risen to $157,000,000, and in 1921 it was $202,000,000, an increase of $125,000,000 in seven years. Were figures available for 1923 they would show an increase of several million dollars over 1919, for the price trend, with but few exceptions, has been steadily upward.

COKE PRODUCTION

	Net Tons Produced			Per Cent of Total Output		
Year	Beehive	By-Product	Total	Beehive	By-Product	Total
1913	33,584,830	12,714,000	46,299,530	72.5	27.5	100.0
1915	27,508,255	14,072,895	41,581,150	66.2	33.8	100.0
1917	33,167,548	22,439,280	55,606,828	59.6	40.4	100.0
1918	30,480,792	25,997,580	56,478,372	54.0	46.0	100.0
1919	19,042,936	25,137,621	44,180,557	43.1	56.9	100.0
1920	20,511,092	30,833,951	51,345,043	40.0	60.0	100.0
1921	5,538,042	19,749,580	25,287,622	21.9	78.1	100.0
1922	8,573,467	28,550,545	37,124,012	23.1	76.9	100.0
1923	17,960,000	37,527,000	55,487,000	32.4	67.6	100.0

A Sales Calendar for 1924

The new year calls for a new sales calendar. Why not work out one that will assure an increase of sales to the home, the commercial and industrial establishments? Why not open up in January with the industrial appliances for use, say, in garages, following in February with a drive on small factories? March may be given over to automatic water heaters, April to ranges, May to the home laundry, making your drive on the gas-heated washing machine, then in June come back with a combination sale of gas ranges and water heaters, and in July feature the gas-heated ironing machine; in August play up automatic water heaters again. September should find you ready for the first big shot on heaters, featuring the portable radiant type. October may be given over to gas-fired house heating boilers, November may be a combination month, with especial attention given to garage heaters and supplementary heating for the home—then, with December, close with an appeal for better home equipment for gifts.

If some such program is worked out and the advertising is planned in the same way, together with the sales efforts and store and window displays and demonstrations, there is no reason under the sun why sales will not take a decided jump in 1924. Do not overlook a single outlet. List the 1,200 uses for gas and then chart the number of establishments in your town which may be regarded as prospects. From this data work out your sales plan. Then find out what your average domestic customer is doing and lay your plans to INCREASE THE USE OF GAS PER METER. Remember, you want to sell more gas as well as hook up new customers. Why not say we will increase our sales per meter 50 per cent in 1924? There is something to work to.

Now, PLAN YOUR WORK AND WORK YOUR PLAN IN TWENTY-FOUR.

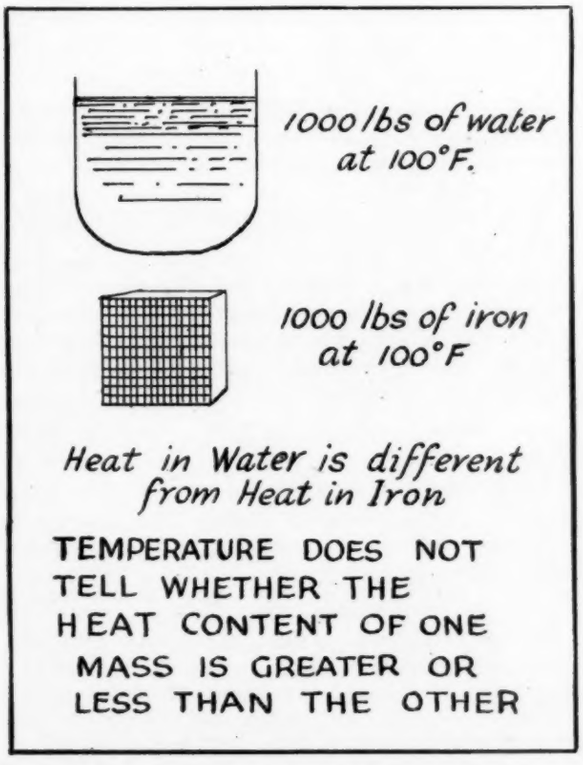
INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 5

The measurement of temperature

TEMPERATURE is a way in which the heat of bodies is measured. It does not tell the exact quantity of heat the body possesses, but is a relative measure of the heat in the same in comparison with its surroundings and with other substances. The most common way in which it is possible to tell whether a body is hot or cold is to feel it with the hand. If it feels hot, it is concluded that the temperature of the body is high; if it feels cold, the temperature of the same is said to be low. These are merely comparative conceptions, for the hotness or coldness of the body in this case is based purely on the way it feels to the touch. Thus, as the temperature of the body is about 98.5 degrees Fahrenheit, if the substance is cold to the touch, its temperature must be below that point, and if it is hot to the touch then it must be above that point. It is also possible for one of two bodies, both at the same temperature, to feel cold to the touch, and the other hot. This phenomenon is reserved for later discussion.


1000 lbs of water at 100°F.
1000 lbs of iron at 100°F
Heat in Water is different from Heat in Iron
TEMPERATURE DOES NOT TELL WHETHER THE HEAT CONTENT OF ONE MASS IS GREATER OR LESS THAN THE OTHER

On the very face of it, temperature is not a very satisfactory way in which to measure heat, but it indicates an important property of a body which is used in many different ways in practical work. Temperature is much like the head of water in a waterfall. The head tells something about the potential energy of the water at the top of the fall. It does not give the energy that will be developed by the water in passing over the fall. In order to obtain this, it is first necessary to know how much water falls, the weight of the same. In an analagous respect the temperature of a substance is merely the denotation of a definite quality, which is dependent on the amount of heat it contains.

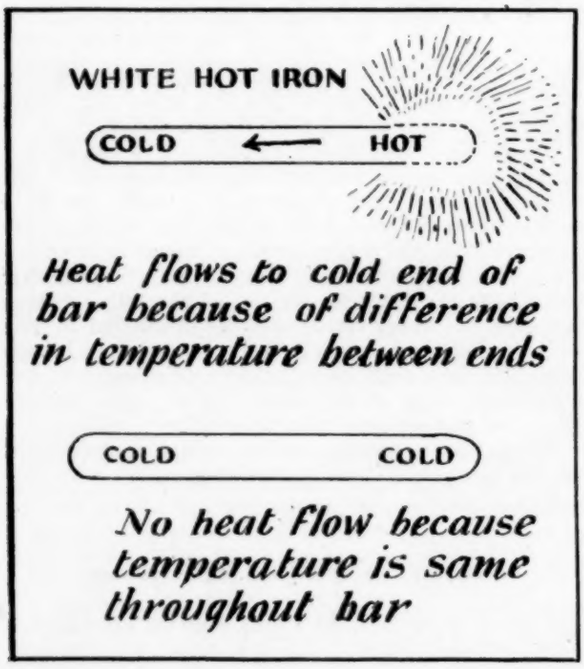
Temperature and Heat Transference

It gives, however, important information about a body, even if it does not tell how much heat the body contains, which, after all, is the real significant fact as far as measurement of heat energy is concerned. It tells us, for instance, if it is possible for heat to be obtained from a body by transference to other bodies. For, only if the temperature of one body is higher than another, will heat move from one to the other. It also gives us some idea as to how much heat can be obtained from the hot body in this manner, for if the temperature of the first body is considerably higher than the second, it is evident that more heat will flow from the first to the second than if the temperature difference were smaller. For it would take a longer time for the two bodies to attain a common temperature at which point no heat at all would flow from one to the other.

But it will not tell whether one body possesses more heat than another. Thus, if a bar of iron is known to be at 100 degrees Fahrenheit, this knowledge will not tell whether that body contains more heat than a similar weight of water at the same temperature. Temperature also tells us whether the flow of heat from the hot to the cold body will be fast or slow, for generally the greater the difference in temperature between the two the faster will be the flow of heat from the hotter to the colder substance.

Temperature a Relative Method of Heat Measurement

The degree, which is the unit of temperature, is therefore not an absolute unit of measurement, like the inch for length, the pound for weight, the horsepower for mechanical energy, the watt for electrical energy, etc. It is only a relative, comparative unit and hence it is not entirely satisfactory, and in fact in certain cases it is altogether unreliable for determining the possible heat energy contained in a body.


WHITE HOT IRON
COLD
HOT
Heat flows to cold end of bar because of difference in temperature between ends
COLD
COLD
No heat flow because temperature is same throughout bar

The best example of this fact is given in the apparent difference of temperature in certain bodies, such as a bar of metal and a piece of cloth, when these substances come in contact with the hand. If the room is cold, the iron bar will feel much colder than the woolen cloth, and if the room is warm it will feel much warmer. Nevertheless, the temperature of the two substances will be identical.

How Temperature Is Measured

In a preceding lesson a discussion has been given of the effects of heat. Any or all of these effects of heat may be used in measuring temperature. In other words, a temperature-measuring instrument may be made by utilizing any of the heat effects, mentioned above, and it will depend fundamentally on the change in some property of matter that is caused by heat.

n that heat will cause substance to expand. A certain degree of heat produces a definite amount of expansion in a body which can be measured. Another degree of heat produces a greater or lesser expansion. If the same degree of heat will always cause a correspondingly identical amount of expansion, it is clear that the expansion of a body may be employed in the measurement of temperature, provided a definite scale is devised. The scale is entirely arbitrary, as must be realized, and has nothing to do with the real amount of heat in the body.

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465 SHENANDOAHS COULD BE FILLED WITH GAS DALIY

Three hundred and seventy billion cubic feet of manufactured gas, or more than a billion cubic feet a day, were used in the homes and factories of the United States last year, while New York State alone consumed approximately ninety billion cubic feet, according to a statement of the New York State Committee on Public Utility Information.

These tremendous totals establish both national and state records unapproached in the hundred-year life of the gas industry, in each case marking an increase of about 20 per cent over the totals for 1922, itself a record year.

The huge airship "Shenandoah" is completely filled with 2,150,000 cubic feet of gas, so the daily production of a billion cubic feet is enough to fill a fleet of 465 such monsters.

New York State, with 88 manufactured gas companies and more than 10,000 miles of mains, consumes more gas than any other state, and last year reached a new high mark with approximately ninety billion cubic feet. Gas service in New York is available to nine million people, and 2,350,000 gas meters have been installed in homes and industrial establishments to record its use.

COKEISMS

Whether coke is to remain a residue of the gas industry or become a finished product, with a character and reputation, depends upon the attitude of the gas managers and engineers of today.

If Henry Ford was in the gas business, could you imagine him selling coke as a substitute fuel or as a by-product of the coal gas industry?

A gas company that cannot sell coke to its employees should not attempt to sell the public.

A gas company that sells coke under what can be considered a fair price does so at the expense of its gas consumers.

A satisfied coke customer is a friend of the "GAS" company.

Coke is a man-made anthracite—the solid fuel of the future. Believe in it, use it, and boost it.

Your company may not manufacture coke at the present time—it may some time in the future. Interest yourself in coke; study its possibilities and its value as a fuel.

As The Journal Views It

NATIONALIZATION OF PUBLIC UTILITIES

It was only the other day that the writer was an involuntary listener to a conversation that was going on between two women, of the so-called upper middle class, who were sitting behind him in a commuter's train. One of these women at the end of her talk, which was concerned with gas companies, railroads, and the like, remarked, "What a wonderful thing it would be if nationalization of public utilities could be attained?

Nationalization of public utilities, or in what might be called its milder but no less dangerous form, municipal ownership, is something that has always confronted the public utility industry. There is a decided feeling among some people that the gas companies and the railroads, and all the rest of the public utilities should be owned and operated by the Government. Of course this has been a very favorite argument of the political highbinder, and many an aspirant for public favor has reached the people through such arguments and harangue.

If the afore-mentioned conversation had taken place between two men evidently politically inclined, it would be of very little importance, because we would expect such men to have such ideas, but it was between two refined women, who evidently were well endowed with worldly possessions, and whose men folks most likely had interests of some sort or another in public utilities. That they should be such fervent advocates of the ownership of public utilities by the Government is strikingly significant. Of course it does not imply that all the people of that class feel the same, but it is surprising that any of them should have such ideas.

This makes it necessary to keep the matter of municipal ownership and nationalization of utilities constantly before the public utility industry, so that it will not allow anybody to steal a march on it. It is a question of education, the submitting of substantiated facts to those who feel that the best thing that could happen for this country, and others, would be to have the Government own and control the utilities. This is what the public utility industry and the gas companies in particular must do. Intelligent people can be convinced by facts that their beliefs are wrong, and that the worst thing that could happen to a community is to have the local government own the public utilities.

Not very long ago a magazine devoted to public utilities had some very pertinent information to disclose regarding the success of New York City in running the various public utilities that it owns. For example, it was mentioned that in 1922 the municipal ferries lost about a million and a half dollars. There was also a very large loss in the operation of the trackless trolleys on Staten Island, it costing almost twice as much to run the railroad, per person carried, as that person paid for his transportation. These are just examples. Many others could be found, and what must be impressed upon the people is that when the city loses money in operating the utilities it owns, this money must come out of the pocket of the taxpayer. There is no other way in which it can be obtained. When he is shown that he actually has to pay for these experiments out of his own pocket, he will soon see to it that the Government stops making them.

Then, again, it must be mentioned that when people advocate Government ownership of public utilities, they have the idea in mind that these utilities are owned by a few wealthy men who are benefiting through the efforts of all by the growth of cities, or through advantageous franchises, but this is not true.

The public utilities now number millions of stockholders, who are the public, and not a few rich men. Statistics show that there are approximately 1,000,000 who own stock in the railroads, and there are more than 1,750,000 people who own stock in the electric light and power companies. Similarly the ownership of telephone systems and gas plants is just as widely disseminated.

The people really own the utilities, but they own them in a private capacity. There is all the difference in the world between the utilities being owned by the consumers in this way and the Government owning them in an official capacity, and subjecting them to the inefficient and depredatory control of politicians.

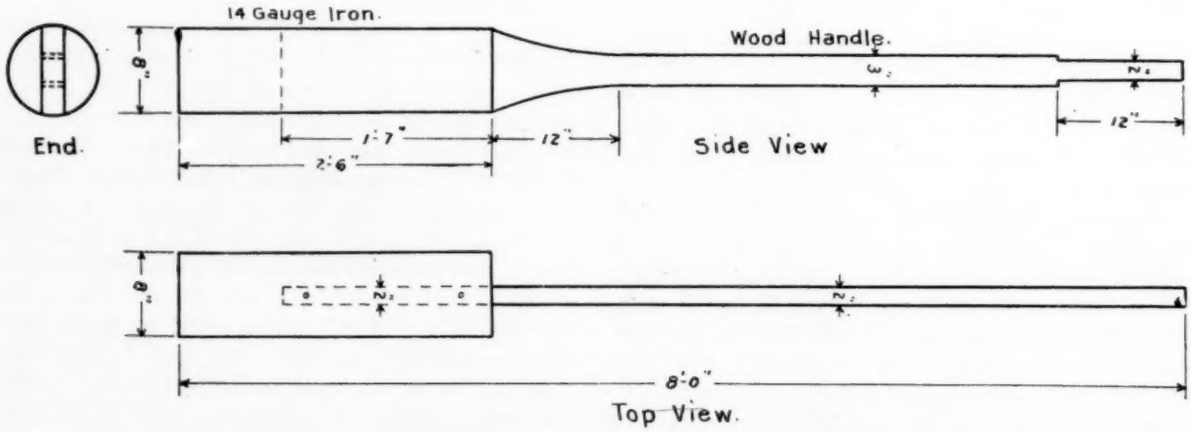
GAS WRINKLES

Pipe Tunneler

W. F. Tyler

Bakersfield, California

This tunneler is composed of a tube of 14 gauge iron 8 in. in diameter and 2 ft. 6 in. long, open at both ends. Into one end is fastened a wooden handle, making the total length of the tunneler 8 feet, as shown on the drawing.



If this tunneler is rammed into the earth and then withdrawn it will be found that a very considerable quantity of earth will be jammed inside of the tube and withdrawn with it where it is easily removed by slightly jarring the tunneler, and the process repeated.

For long bores an extension can be put on the handle.

One of the greatest advantages of this type of tunneler is that it can be handled by unskilled laborers by merely seeing that they get started straight.

These tunnelers are very useful in putting pipe under paved highways, and 4 in., 6 in. and 8 in. pipe can be installed under 16 to 24 foot paving with very little trouble with one of these tunnelers; in fact, mains are frequently installed under much wider paving without in any way interfering with traffic or disturbing the surface.

Note: Mr. Tyler, when submitting this wrinkle, stated that it was old; nevertheless, I am publishing it for the reason that it is undoubtedly the most satisfactory form of tunneler for moderately long bores and comparatively soft earth that has yet been devised.—Editor.

MANDRIL FOR STRAIGHTENING AND STRETCHING LEAD BOUND GASKETS, SUCH AS USED IN DRESSER AND SIMILAR COUPLINGS

J. A. Harritt, San Diego, California

A mandril turned from hardwood 3 ft. long by ¾ in. diameter at the small end and 5 in. in diameter at the large end provides a very rapid means of shaping all gaskets from ¾ in. to 4 inches. This takes up little room and, added to the equipment of work cars, is a great time and labor saver. A mandril of larger diameter can be made for larger gaskets.

LUBRICATING PRESSURE GOVERNORS

J. A. Harritt, San Diego, California

To eliminate the difficulty with pressure governors on reciprocating pumps, both oil and water, install mechanical force-feed lubricators so as to inject the oil into the steam ahead of the governors. The governors so lubricated give a remarkably straight pressure curve, whereas the unlubricated governor gives an irregular curve, due to the power required to operate the dry regulator valve.

This principle can be extended to lubricate steam header valves, which are in constant use in generator operations.

Catechism of Central Station Gas Engineering in the United States

Installment No. 5

(Continued from last week.)

The rake frame is pivoted in the cross head so that the front end of it and the rake can be raised to let the rake pass over the coke as it makes the forward stroke into the retort and lowered to force the rake down into the coke and bring the latter with it as it is withdrawn.

The power for driving the rake back and forth and withdrawing the coke is furnished by a piston driven up and down in a vertical cylinder by means of compressed air admitted alternately above and below the piston. Fastened to the piston is a rod carrying a rack, the teeth of which engage in those of a piston on the axle of a chain drum. To this drum two chains are attached in such a way that as one is wound up the other is unwound. The drum is made in two parts, one for each chain, which, while they move as one when the machine is in operation, can be moved separately in order to take up the slack of the chains when the rake is raised from a lower to a higher level and to pay out the chains when the rake is lowered. One chain runs from the drum down to, and partly around, a pulley wheel carried on the upright frame, then forward to, and partly around, a pulley wheel fixed on the forward end of the rake bar frame, and then back to be fastened to the back end of the rake bar. The other chain runs from the drum down to, and partly around, a wheel on the upright frame, then back to, and partly around, a wheel on the rear end of the rake bar frame and forward to be also fastened to the back end of the rake bar at the same point as the first chain.

How the Compressed Air Actuates the Machine

Compressed air is brought to the machine by a flexible hose, and its admission to the cylinder is regulated by means of a valve chest and a slide valve. Five ports open into the valve chest, there being a separate exhaust and admission port for each end of the cylinder and an exhaust port opening to the outer air. The admission ports open into the cylinder next to the heads and each is provided with a check valve so set that it will open under pressure from the slide valve side and close when this pressure is removed, or a greater pressure is applied from the side toward the opening in the cylinder. The exhaust ports open into the cylinder at some little distance from the heads, so that as the piston nears the end of its stroke, in either direction, it closes off the corresponding exhaust port and is brought gradually to rest by the compression of the air still left in that end of the cylinder. The slide valve is an ordinary D-valve except that it contains a by-pass pasasge which puts the two ends of the cylinder in communication with each other, and thus permits the pressure to be equalized on both sides of the piston, when the valve is in its middle position. The valve is operated by a hand lever to which are connected two tappet levers for automatically putting it in its middle position just as the piston reaches either end of its stroke.

How the Machine Operates

In operating the machine the rake bar is set at the proper height for the tier of retorts to be drawn, and the machine is moved opposite the first retort in the series. The operator, with one hand on the air-valve lever, moves this so as to admit air into the bottom of the cylinder. This raises the piston and revolves the chain drum so that the rake is pushed forward into the retort, the operator, by means of the rocking lever in his other hand, raising the rake above the coke. When it has gone in far enough he reverses the air valve, thereby first equalizing the pressure on both sides of the piston and then admitting air into the top of the cylinder, and at the same time drops the rake into the coke. The pressure of the air on top of the piston forces it down and moves the drum in the opposite direction, withdrawing the rake from the retort and bringing the coke with it. As the piston nears the bottom of the cylinder it shuts off the bottom exhaust port and compresses the air ahead of it until it is brought to a stop just as the tappet lever moves the slide valve to its middle position and allows the pressure to be equalized in both ends of the cylinder. The operator then pushes the valve over to admit air into the bottom of the cylinder and the process is repeated, the rake going farther into the retort at each stroke until all the coke is drawn out. When going in to the extreme distance on the last stroke, the air is cushioned ahead of the piston in the upper end of the cylinder just as is done at the bottom on each stroke. This cushioning at the bottom prevents the rake from being withdrawn clear of the retort, so a relief port is provided in the bottom head of the cylinder. This port is fitted with a valve, normally kept closed by the pressure in the cylinder, which, when the drawing of the retort is finished, is raised by the movement of a third lever. As the air escapes through this open valve the piston drops and the rake is completely withdrawn from the retort, and the machine can be moved into place in front of the next retort and the above operations repeated.

Sometimes a small water tank is placed on top of the upright frame and the water from this tank is allowed to run on the rake head to cool it when it is drawn out of the retort.

This machine was developed in England, and was introduced into one or two works in the United States about 1904; but in more recent installations in this country there has been used, in connection

with the West charging machine, a ram driven by electricity, by which the coke is pushed out of through retorts—that is, retorts open at both ends. This ram is mounted upon the same carriage as the charging machine, and worked by the same operator.

A similar ram is used as a companion machine to the De Brouwer projector.

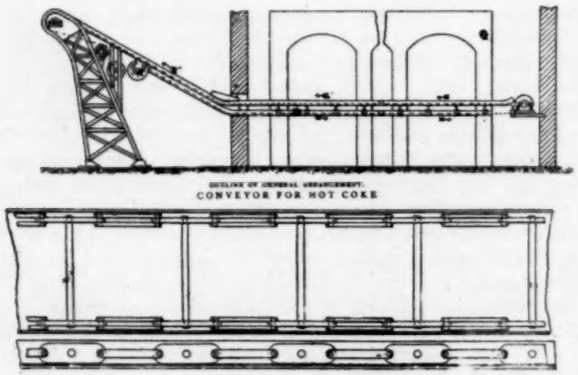
Hot Coke Conveyor

27. Has any conveyor been successfully applied to receive the hot coke as it comes from the retorts and transport it to the coke yard, the coke being quenched in transit? Is so, give a description of it, illustrated with sketches.

Ans. As far as is known at the present time (1903), only one gas company in the United States has had, with conveyors for the transport of hot coke, a satisfactory experience that has extended over a period of several years, although there are several companies that have recently installed conveyors for the purpose named. Almost all of these recent installations are examples of types of conveyors that have been developed in Europe. The experience of the company first mentioned has been such that an improved form of the conveyor used in an old retort house has been installed in a new retort house recently built.

Construction Conveyor

This conveyor consists of interlapping pans made from soft steel sheets, 3/16 in. thick. Each pan is about 15 in. long and by their interlapping they form a continuous trough 20 in. wide and 6 in. deep of the length required to serve the stack. To the bottom of each pan is fastened one link of a chain designed so that any link can be easily removed as occasion



CONVEYOR FOR HOT COKE

Details of Chains and Cross Bars.

arises and so that the wear at the joints between the links will be very slight. This chain passes over a friction driving wheel set at one end of the run and is driven by the friction between this wheel and suitable cylindrical bearing pieces provided on the chain. The working run of the pan is supported by wheels with horizontal axles, turning in fixed bearings and set in pairs, the proper distances apart, the whole length of the conveyor. To keep the wear caused by these wheels from coming on the pans themselves two narrow channel irons are riveted to the bottom of each pan, parallel to the driving chain and one on each side of it, and these channels form two continuous longitudinal grooves which rest on top of the wheels and also serve to guide the pan and keep it moving in a straight line. On the return the pan is guided by wheels with vertical axles, which bear lightly against the sides.

In this conveyor the coke simply rests in the pan and is carried along with it, so there is no friction between the coke and the metal bottom. The chain is kept entirely out of contact with the coke, reducing the wear upon it, and being driven by a friction wheel, instead of a sprocket wheel, slight increases in the length of link arising from wear do not interfere with the driving. The individual pans are very easily made by bending up the edges of flat plates of the proper size, and the parts upon which the wear comes can be very easily renewed, so that the conveyor is comparatively cheap in first cost and also in respect of cost of repairs. The Trustees have been unable to obtain sketches of this conveyor.

Fixed Trough Conveyor

Almost all the other conveyors in use with hot coke act by pushing the coke along a fixed trough by means of scrapers of varying forms. The one that has been longest in use is illustrated on the accompanying cut, and consists of a trough made of cast iron, wrought iron, steel or masonry, in which move two endless chains of special construction joined together by cross bars at intervals of about two feet. These cross bars also act as distance pieces and keep the chains parallel. The trough is either placed on the charging floor of the retort house or set in this floor with its top flush with the floor level. It varies in width from 20 in. to 2 ft. 9 in., the largest size being used for large installations of inclined retorts. The depth is usually 5 in., though the wide troughs can be made with a depth of 3 in., since most of the coke falls near the center and very little reaches the sides. The bottom of the trough must be perfectly smooth so that there shall be no obstruction to the moving coke. The joints between the various plates composing the bottom and between these plates and the angle iron sides must be made water-eight, and the ends of the trough are turned up to retain the water for quenching, which is run into the trough continuously while the conveyor is at work. At the end at which the coke is delivered the conveyor may be, and usually is, run up at an angle of 30 degrees with the horizontal to a height sufficient to allow the coke to be piled or dumped into wagons or cars, as it has been found that the coke can be easily carried up a trough at this angle.

Action of Chains

The chains, which are driven by suitable sprocket wheels, are kept as near the side of the trough as possible, so as to keep them away from the coke and

thus reduce the wear and tear. As shown on the cut these chains are made of solid blocks joined together by links formed of two flat bars, one each side of the solid links. The weight of the chains and cross bars is carried by the solid links and therefore all the wear comes on these links, which slide on removable wearing strips fastened to the trough in such a way that they can be easily renewed. The links are also so riveted together as to permit of their being easily disconnected.

It would seem at first sight as if the round cross bars of comparatively small diameter would not be efficient in moving the coke along the trough. In practice, however, they are found to carry the coke along perfectly, imparting to it a sliding motion without turning it over or crushing it. Their use keeps down the weight of the moving parts and also the friction, as compared with scraper or plate conveyors, and therefore this conveyor requires less power to do the same amount of work and there is less wear and tear on the bottom of the trough.

Another advantage claimed for it is that the return chain can be carried directly under the delivery trough, as shown, the total vertical space occupied being only from 8 to 10 in.

Use of Water in Trough

When commencing work the trough is partly full of water throughout its whole length, but the coke as it moves along pushes the water before it until the inclined portion at the delivery end is reached. After being partly carried up the slope the water flows back over the coke and thoroughly quenches it. It is thus found that comparatively little steam is generated until the slope is reached, and by having this outside the retort house the steam is kept away from the stokers.

As stated, this conveyor seems to have been thoroughly tested, and in the opinion of European gas engineers of good reputation has proved successful.

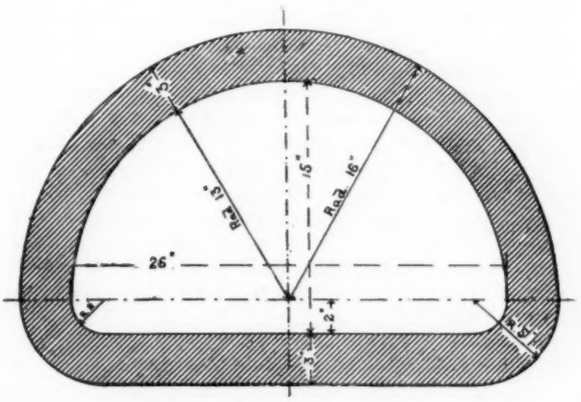
Several other forms which appear promising have been proposed recently in England, but have not yet had the test of long service. For more complete description of the second form described by the Trustees, and also descriptions of other forms, the student should read a paper on Coke Handling Plant, read before the Institution of Gas Engineers, and published in the Journal of Gas Lighting, Etc. (London), Volume LXXIII, page 1349, and also in the American Gas Light Journal, Volume LXX, page 884. See also Journal of Gas Lighting, Etc. (London), Volume LXVIII, page 1235; Volume LXXI, page 1469; Volume LXXIV, page 767, and Progressive Age, Volume XVI, page 46.

Cross-Sectional Form of Gas Retorts

23. Name the principal shapes of cross-section that have been adopted for clay gas retorts and give a sketch of the cross-section which you think the best. Show on the sketch the principal dimensions of the cross-section and the thickness of the retort walls. Give the reasons for your choice.

Ans. According to King's Treatise, clay gas retorts have been made with the following cross-sections: Square, square with rounded corners, round, **oval** and Ω shaped. The last three shapes have been the most used, and in recent years round retorts have almost entirely disappeared, leaving only the oval and Ω shapes in general use.

There is little to choose between these two shapes. In both the coal can be placed in the retort in a comparatively thin layer of uniform depth over its entire width, permitting of uniform carbonization. The oval retort is little stronger sideways than the Ω, but in a well-built setting there should not be any great side strain on the retorts, and as the Ω retort can be made with a semicircular top, it is better able to resist the vertical strains to which retorts



Cross Section of Clay Retort

are most liable to be subjected than is the oval, with its flatter top. It is easier to draw the coke from an oval retort than it is from a Ω shaped one with sharp corners, but this difference disappears when the Ω is made with rounded corners, and this shape, in the form shown on the accompanying cut, is probably employed in this country to a greater extent than the oval.

The walls of the retort are usually made 3 inches thick, with an increase to 4 inches or 4½ inches for about 9 inches to 12 inches at the front end, for the purpose of giving the strength needed for carrying the weight of the mouthpiece. In one large coal gas works in this country the retorts are made with walls only 2½ inches thick.

Dimensions of Cross Section

The dimensions of the cross-section should be governed by the amount of coal that is to be charged, and this depends on the heat that can be secured in the setting. It is bad practice to use in a setting that will not carbonize over 250 lb. of coal per charge the same size retort that is used in a setting that will burn off 350 lb. of coal per charge, lasting an equal length of time. In recuperative benches in which

heavy charges can be used the cross-section is usually taken as either 15 in. × 26 in. or 16 in. × 26 in. At one large works, however, retorts of the latter size have been replaced recently by 16 in. × 24 in. retorts, and the change has resulted in the obtaining of better results.

Classes of Coal Gas Retort Furnaces and Advantages

29. The furnaces employed for heating coal gas retorts may be divided into two general classes. What are these classes, what is the distinctive difference between them, and what advantage has either one over the other?

Ans. The two general classes into which the furnaces employed for heating coal gas retorts may be divided are direct fire or plain furnaces and generator furnaces.

The distinctive difference between the two classes lies in the manner in which the combustion of the carbon in the fuel is effected. In the plain, direct fire furnace the carbon is burnt to carbon dioxide, CO_2, in the furnace, the combustion being completed in the fuel bed, while in the generator furnace the combustion is performed in two stages, the carbon being burnt to carbon monoxide, CO, in the furnace, this carbon monoxide being then burnt to carbon dioxide in a combustion chamber in the setting, into which a supply of air is introduced for this purpose.

The only advantage possessed by the plain as compared with the generator furnace is that of lower first cost, it being cheaper to build a setting with a plain furnace than it is to build one with a generator furnace.

Air Excess in Plain Surface

On the other hand, to insure even approximately complete combustion of the fuel in the plain furnace the use of a large excess of air is necessary, the total amount required being two or three times as much as is theoretically necessary, while in the generator furnace where the air supply can be, and is, closely regulated, perfectly complete combustion can be obtained by the use of an amount of air not more than 10 per cent to 15 per cent in excess of the theoretical requirements. Since all the air passing through the furnace and setting must be heated to the temperature of the setting, the great reduction in the amount of air so passing, secured by the use of a generator furnace, permits the attainment of a higher temperature in the setting, when such a furnace is employed, and at the same time diminishes the amount of heat carried away from the setting by the waste gases, and therefore reduces the amount of fuel required to carbonize the coal.

The temperature in the furnace itself being higher in the direct fire furnace than it is in the generator furnace, the clinker formed is harder and the cleaning of the fire is a more difficult operation in the first class of furnaces, while the construction of these furnaces is such that a strong current of cold air flows through the setting during the whole time occupied in this cleaning. This cools the retorts and causes them to crack. The fire in the generator furnace can be cleaned without causing any such flow of cold air through the setting, and this style of furnace therefore possesses the further advantage of prolonging the life of the setting by maintaining it at a uniform temperature at all times.

Differences in Construction of Various Furnaces

30. What are the essential differences in construction and operation between non-generator (plain or direct fire) furnaces, generator furnaces and regenerator or recuperative furnaces as used for heating gas retorts?

Ans. The essential differences in construction between plain and generator furnaces as used for heating gas retorts are in their size and location. The plain furnace is small, with a shallow bed of fuel, from 18 in. to 24 in. deep, and is located in the setting between the bottom retorts, while the generator furnace is larger, with a much deeper bed of fuel, this being 3 ft. deep in the case of so-called half depth furnaces, and 5 ft. to 6 ft. deep for full depth furnaces, and is entirely separate from the setting, being usually directly beneath it.

There are other important differences. The plain furnace is filled and cleaned through the same opening, which is closed by a loosely fitting door, while the generator furnace has an upper door for filling and a lower one for cleaning, both arranged to close air tight. No provision is made in the plain furnace for the control of the air supply except as this can be effected by the stack damper, while the generator furnace is so constructed that this supply can be carefully regulated.

Difference in Operation of Furnaces

The essential difference in operating is in the manner in which the fuel is burnt. In the plain furnace the carbon of the fuel is burnt at once to carbon dioxide, CO_2, while in the generator furnace there is a double combustion, first that of the carbon to carbon monoxide, CO, in the furnace proper, and then that of this carbon monoxide to carbon dioxide in the setting, by means of a secondary air supply. The direct combustion of the plain furnace requires a large excess of air, the total amount being two or three times that theoretically required, while in the generator furnace the air is carefully regulated, and need not be more than 10 per cent to 15 per cent in excess of the theoretical quantity required for perfect combustion. The volume of air to be heated being smaller, a higher temperature may be obtained in the setting heated with a generator furnace with a smaller consumption of fuel.

In both the plain and the generator furnace, the waste gases are allowed to escape to the chimney at a high temperature. The recuperative furnace differs from these in imparting to the air to be used for burning the fuel the heat in the waste gases, which are then discharged into the chimney at a low temperature. Thus there is carried back into the setting some of the heat lost in the operation of the other furnaces. In other respects there is no difference between generator and recuperative furnaces.

(Sixth Installment next week)

INCREASING INDUSTRIAL SALES

(Continued from page 94)

men who operate, manage and control our gas utilities, so that they will help us in removing the detrimental limitations of the past.

As industrial gas men, our problem is two-fold. Presumptuous as it may seem, it is up to us to sell our ideas to the managements for which we work, and secondly, our job is to sell our activity to the manufacturer and to the public in general.

If we stop for a moment and realize the great need that exists for our product, and the fact that whatever limitations we have are very tangible and workable problems that are being gradually but surely solved, I am sure that we cannot help but be optimists and enthusiasts, and have a confidence in the tremendous future of our industrial gas activities.

With the establishment of the proper understanding among the public service utilities, the public service commission, and the public; with the general elimination of the antiquated and restrictive heating value standard requirements; with the adoption of better systems of rate structure; with a realization of the progress we are making in development of cheaper methods of gas manufacture and more efficient and effective gas furnaces and appliances; and with the organization, the men, the personnel, to carry out our ideas—all these should give us a vision and understanding so that we will keep on fighting our problems and making progress until eventually we find ourselves on the threshold of the complete realization of our objective—"If It's' Done With Heat IT CAN BE DONE BETTER WITH GAS."

SAVING MONEY IN OUR BOILER ROOMS

(Continued from page 96)

The selection of suitable types and sizes of pumps and their proper maintenance are probably the most important factors in keeping down the steam consumption.

Checking Up on Steam Consumption of Steam Driven Machines

Our tests of steam using equipment show that steam pumps and engines require a great deal of attention. Even in large Corliss engines, leaky rings and valves were found, which did not show up in indicator cards, and several engines needed reboring.

At B works we replaced nine large wasteful steam pumps using 110 lbs. or more steam per h. p. hour, with four compound and packed pumps, with a steam rate of about 75 lbs. and four centrifugal pumps for river water and circulating water. In some cases motor driven centrifugals will give large savings.

The efficiency and mechanical condition of the driven unit is fully as important as that of the prime mover. Pumps are liable to have a large slippage from leaky valves and piston packings, which suggests that only outside packed plunger pumps or centrifugal pumps, should be installed when the size warrants it. At one of our works a large saving was due to changing from No. 1 Buckwheat to No. 2 Buckwheat coal, with a price differential of $1 per ton.

The results of our work along the lines of steam economies show the value of a detailed analysis of boiler room and engine room conditions. I believe such a study and a boiler room and engine room as outlined are necessary for efficient operation.

The economical production and utilization of our steam has received too little attention; and there are important possible savings in the cost of boiler fuel in most of our gas works.

This work in our case has certainly given very gratifying returns.

THE GAS COMPANY DELIVERS THE GOODS

(An Editorial from the Eldorado Times)

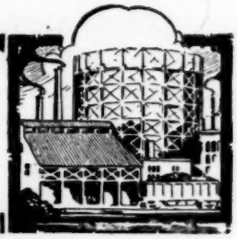
For the past three days the mercury in the old family thermometer has been hovering about zero. During that time many residents of El Dorado have been dependent upon gas to keep their homes and places of business warm. It has been a severe test for the public service commodity, but the gas has stood the test. Not only has there been an abundance of gas for all purposes—both cooking and heating—but the supply has been available when it was most needed. This, to the Times, seems to prove the efficacy of the three-part rate plan and the regulating devices, both of which have been put to work in this town during the past year or so. The value of the limiting devices simply is this: That the Western Distributing Company knows to a foot the demand to be placed upon its lines at any one time. With this information at hand, it is comparatively simple to keep the pressure in the mains at all times above what will be the maximum demand. Thus, the company's problem is made easier and its solution more certain; thus, the needs of the public are better served.

The Value of the Limiting Demand Device

Under old conditions, it was physically impossible always to prepare in advance for fluctuations of demand, caused by sudden changes in the weather, or other circumstances affecting the service. There was danger to property of the company and of the consumers in maintaining a high pressure at all times, in order to meet any sudden withdrawal. So the pressure perforce went up and down, and consumers were not always sure of having gas when they wanted and needed it most. The limiting devices have changed all that. There is always enough gas at the intake of the individual residence or business house to meet the demand specified.

This is excellent. It is an achievement of public service that should win public gratitude. Neither the Western Distributing Company nor the Empire Gas and Fuel Company has rushed to the Times to parade its efficiency under the stress of the coldest weather conditions existing in the past two years. These few words of praise are extended gratis, and without prompting. For the gas utility has them coming. Any public servant that delivers the goods ought to receive its just due. And the gas company certainly has delivered the goods in the recent cold weather emergency.

NEWS OF THE GAS INDUSTRY



St. Augustine Gas Co. Outlines Good Investment

St. Augustine, Fla.—People in St. Augustine are being offered an opportunity to make a gilt-edged investment in a home concern. The St. Augustine Gas & Electric Co. announced in detail its plans in a full page advertisement in a local newspaper. In order that the opportunity for investment may be given to as many people as possible, letters are being sent to customers of the local gas company which read in part as follows:

To Our Customers:

We now offer for sale $35,000 of 8 per cent cumulative preferred stock, at par, $100 per share, and accrued dividends.

The proceeds from this sale will be spent here in St. Augustine for necessary additions, extensions and improvements to the company's property, to keep pace with the growth of its business.

Dividends at the rate of 8 per cent per annum are payable April 15, July 15, October 15 and January 15, and these dividends are exempt from the present normal Federal income tax.

In case of this stock being redeemed by us at any time, the holders will receive $120 for each share of the par value of $100.

This is your opportunity to have your money work for you as you have worked for it.

It is not necessary to pay cash for the shares you purchase; we not only will accept partial payments, but will allow you interest at the rate of 6 per cent per annum on the installment amounts received until the stock is paid for in full.

If you wish, I will have one of our representatives who lives in your neighborhood call and give you full information. A post-card is enclosed for your convenience.

Very truly yours,
JNO. J. GANNON,
Superintendent.

The following is also a well-put thought, and brings out very clearly the advantages accruing to investors in the local company:

"When you invest in the stock of the St. Augustine Gas & Electric Light Co., you are investing in real property and tangible assets which you, as a user of gas, see about you every day. You are not taking the word of some stranger, but know from your own observation and experience just how your savings are being used to bring comfort and service to the community and at the same time yield you an 8 per cent return on your investment. It is wise to deal with people you know, and with a company that you know."

Many companies belonging to United Gas are expanding and are giving people in their own localities an opportunity to invest. The Pensacola Gas Co. announced recently the issuance of $70,000 worth of 8 per cent cumulative preferred stock.

Adirondack Co. Elects Directors

Amsterdam, N. Y.—At the annual meeting of the stockholders of the Adirondack Power & Light Corporation, held at the principal office of the company in Amsterdam, the following directors, whose terms had expired, were re-elected for a period of three years:

T. R. Beal, president of United Hudson Electric Corporation Poughkeepsie; John Barnes, president of Montgomery County Trust Company, Amsterdam; Ledyard Cogswell, Jr., president New York State National Bank, Albany; Maurice Hoopes, president Finch Pruyn Company, Inc., Glens Falls; W. C. Hotchkin, president of Hotchkin & Co., of Boston; T. R. Lovejoy, vice-president of General Electric Company, Schenectady.

It was voted to change the location of the principal office from Amsterdam to Schenectady.

At this meeting it was reported that the gross revenue of the company for the month of December, 1923, was $654,820.37, compared with $647,752.78 in December of 1922, an increase of 1.9 per cent. Operating expenses for the month decreased $87,113.40, or 18.36 per cent, compared with the previous December. Gross income for the month was $267,573.05 and showed an increase of $94,180.98, or 54.72 per cent over December, 1922. Net income was $169,992.10, an increase of $95,761.45, or 129 per cent, over December, 1922.

For the twelve months ending December 31, 1923, gross revenue was $6,903,447.19, compared with $5,767,840.72 for the previous twelve months, an increase of $1,135,606.47, or 19.69 per cent. The gross income for the same period was $1,998,955.31, compared with $1,716,428,91 for the year 1922, an increase of $282,526.40, or 16.46 per cent, during the year. Net income for the year 1923 was $864,127.46, an increase of $198163.36, or 29.76 during this period. After paying preferred stock dividends and making all adjustments there was added to surplus $201,577.44, increasing this amount to $2,002,365.55. Surplus earnings for the year after all deductions were 2.18 per cent on the common stock outstanding at the end of the year.

Awards Contract for New Holder

The Michigan Gas & Electric Co., of Three Rivers, Mich., has awarded contract to the Western Gas Construction Co., of Fort Wayne, Ind., for the construction of a 100,000 cu. ft. capacity two-lift holder in steel tank.

Cut $17,395,000 Off Assessments of Gas Companies

New York, N. Y.—Controller Charles L. Craig announced he had received formal notice from the Department of Taxes and Assessments of the cancellation of 12 items of taxes levied for 1923 against the gas companies in Manhattan and Queens. These cancellations take $17,395,000 off the assessed valuation of these companies and reduces the taxes of the companies by $476,623.

The action of the tax commissioner was taken on the advice of Corporation Counsel George P. Nicholson, who holds that the gas companies are right in their contention that these assessments were a duplication and that the franchise tax assessment fixed by the State Tax Commission included this valuation.

In 1912 the corporation counsel advised the tax department that the city would be in a better position to collect its taxes if it carried a duplicate assessment on all tangible property of the gas companies in the streets. The reason then given by the corporation counsel was that he was about to start a suit against the various gas companies to show that they were operating without franchises. If the courts decided in the city's favor, the special franchise assessments would be voided and the real estate assessments, which are the kind covered by this cancellation, would hold. This suit was never brought by the city.

The attitude of the corporation counsel in advising the cancellation of the so-called duplicate assessments, may be construed as indicating that the present corporation counsel does not intend to question the validity of the gas company franchises.

The gas companies owe similar taxes for the years 1913 to 1922, inclusive. In June, 1921, Controller Craig, acting for the city, brought tax liens against these companies for all the taxes in arrears at that time. These liens were sent to the corporation counsel for foreclosure but no action was taken by him. It is anticipated that application will now be made by the gas companies for the cancellation of the old taxes.

The 1923 taxes cancelled cover the following Manhattan corporations: New York Gas Light Company, $2,000,000; Manhattan Gas Light Company, $2,600,000; Harlem Gas Light Company, $1,625,000; Municipal Gas Light Company, $1,725,000; Metropolitan Gas Light Company, $2,150,000; Knickerbocker Gas Light Company, $2,000,000; Equitable Gas Light Company, $1,300,000; East River Gas Company, $2,360,000. In Queens, East River Gas Company, $1,635,000.

Elmira Company Issues Statement to Stockholders

The Elmira Water, Light & Railroad Company, Elmira, N. Y., has issued a brief report covering the activities of the gas, electric and railroad departments during 1923. The report covering the gas department follows:

"Our new gas plant has made good, and for the first time Elmira has had a dependable gas supply in cold weather.

"You are familiar with the problem we had early in 1923, convincing our customers that the new gas was good and that whatever difficulty existed was due to inefficient appliances or careless ways of using gas. Now practically all our customers realize that our gas is the same as in other New York State cities, but costs less.

"While our difficulties have been overcome, a small percentage of gas users discontinued using gas. These we expect to regain soon. The net result was that we had 8,960 gas customers on December 31, 1923, 320 less than at the beginning of the year. Due to the improved gas service, however, in 1923 we sold about 30 per cent more gas than in 1921 or 1922.

"The prospects for 1924 in our gas department are even better than in our electric department. The reason for this is that heretofore we have been unable to expand our gas sales by securing new customers in large numbers or by selling gas to factories for manufacturing purposes.

"The adequate supply of good gas we now have makes it possible for us to actively solicit new gas customers and increased usage by existing customers."

Contract for New Equipment

The Hyde Park Gas Company, of Scranton, Pa., has placed orders with the U. G. I. Contracting Company of Philadelphia to furnish three U. G. I. model "B" Automatic Controls, to be installed on each of the carburetted water gas sets at the Scranton plant.

With the Automatic Controls will also be furnished the U. G. I. Thermo Controls and Generator Blast Controls.

They have also placed an order for the installation of the U. G. I. Heavy Oil Nebulizing System.

This method of handling heavy oils in carburetted water gas apparatus is becoming increasingly popular and satisfactory throughout the country.

Gas Schedule Approved by Public Service Commission

Halfmoon Light, Heat & Power Co. Gas service supplied in the city of Mechanicville, N. Y. Rate for lighting and cooking service reduced from 67 to 60 cents for first 100 cu. ft. and from $1.70 to $1.53 per thousand cu. ft. for all over 100 cu. ft. per month. Former prompt payment discount (10 per cent) discontinued and delayed payment of 10 per cent added. New classification for use of service for heating buildings with gas steam radiators and gas fired boilers provides rates as follows: First 100 cu. ft., 60 cts.; next 4,900 cu. ft., $1 per thousand cu. ft.; next 20,000 cu. ft., 80 cents per thousand cu. ft.; all over 25,000 cu. ft. per month, 75 cents per thousand cu. ft. Minimum charge, 60 cents per month. Delayed payment penalty, 10 per cent. Effective January 21, 1924.

Charter Granted to Manufacture Appliances

The Industrial Gas Equipment Co., New Haven, Ct., has been granted a Connecticut charter to make, sell and install gas appliances. The company is capitalized for $100,000. Anthony J. Verdi, 315 Willow street, New Haven, heads the organization.

Cities Given Mandatory Powers to Regulate Gas Rate in New Bill

Albany, N. Y., Jan. 28—A most important amendment to the Public Service Commission Law conferring upon all cities of the State mandatory power to regulate gas and electric rates was introduced by Robert C. Lacey of Buffalo, representing the Forty-ninth Senatorial District, tonight.

The measure adds three new sections to the Public Service Commission law at the end of Article 1, which deals with general provisions and powers; Section 24-A, dealing with power of cities to regulate the rates and charges of gas and electric corporations, as the agent of the State through its governing body.

Section 24-B. This section relates to transfer of jurisdiction from the Public Service Commission to the local body choosing to exercise the right and power of regulation.

"24-B. Transfer of Jurisdiction. Every provision of this chapter or of any other law, general or special, which in terms or by implication confers jurisdiction, grants power, devolves duties upon, or authorizes proceedings by, the state public service commission, in relation to the rates or charges of gas and electric corporations, and every such provision which in terms or by implication applies to such state public service commission in relation to such rates or charges shall be deemed and held to confer like jurisdiction on, grant like power to, devolve like duties upon, authorize like proceedings by and have like application to the governing body of each city in relation and respect to such rates and charges, in such manner and with such effect that such governing body shall to such extent have full jurisdiction and control thereof and such state public service commission to such extent be divested of all jurisdiction and control thereof."

Section 24-C deals with continuation of suits and proceedings pending at the time the act takes effect.

"24-C. Continuation of Jurisdiction; Suits and Proceedings. The several governing bodies of each city shall be deemed and held to constitute a continuation as to all such matters within their respective jurisdictions of the state public service commission and not as new departments or agencies of government; and the transfer of the powers and duties thereto shall not affect any action or proceeding, civil or criminal, brought by or against the state public service commission or any action or proceeding to which such state commission succeeded as a party, but such action or proceeding may be prosecuted or defended in the name of the appropriate city and such city upon application to the court shall, in a proper case, be substituted as party thereto."

Act Is Mandatory

The act would take effect immediately and is most drastic in its provisions, being almost mandatory in character. Of course, if enacted into law, old rates would continue in force until changed or modified and present conditions of service would not be subject to change until action was taken.

The measure would in effect set up a separate public service commission in each of the sixty cities of the state and would leave to the city itself the creation of a body or the use of a bureau of government already created to function the activity.

Changes in H. L. Doherty Personnel

Henry L. Doherty & Co. announce the following changes in personnel:

E. C. McClure, who has been superintendent of the electric department in Denver, has been transferred to St. Joseph, Mo., as general superintendent.

Henry Kerr, who has been superintendent of electric production in Denver, has been appointed superintendent of the electric department.

Robert W. Curran, formerly superintendent at St. Joseph, Mo., has been appointed general superintendent at Portsmouth, Ohio.

All of the above appointments cover in their order the following subsidiaries of Cities Service Company: The Public Service Company of Colorado, St. Joseph Railway, Light, Heat & Power Company and the Ohio Public Service Company.

Utility Manager Heads Chamber of Commerce

Harry E. Merrill, general manager of the Republic Light, Heat & Power Company, Tonawanda, N. Y., was recently elected president of the Chamber of Commerce of the Tonawandas. This announcement was made at the annual banquet and meeting of the Chamber.

In announcing the election of Mr. Merrill, Attorney Dow Vroman, toastmaster, brought out the fact that it was the first time in the history of the Chamber that a public utility official had been selected for this great responsibility, thus clearly demonstrating that the feeling of antagonism toward the public utility was a thing of the past.

Mr. Merrill was selected because of his standing with the entire population of the Tonawandas. His ability to satisfy the public has been demonstrated many times in the past five years. He is much sought for in committee work and is serving on committees for most every important public institution in the Tonawandas, for he has the reputation of completing the job he tackles.

At the present time Mr. Merrill is serving as director of Y. M. C. A. and chairman of the physical work committee; director and second vice-president of the Rotary Club, also on its publicity committee; trustee and head of Boys' Sunday School in North Tonawanda M. E. Church. He is a prime mover in the Masonic and B. P. O. E. orders.

Mr. Merrill joined the Doherty organization at Denver in 1909. In 1910 he was transferred to Spokane, working there in all departments and getting practical experience. In 1913 he joined the Improved Equipment Company. He then went with the Cyanamid Company of Niagara Falls. While with this company he married.

In 1915 he returned to the Doherty organization at Toledo as manager of the Atlas Chemical Company. He was there two years and was transferred to Denver as superintendent of the gas department. In 1919 he was transferred to Tonawanda as general manager of the Republic Light, Heat & Power Company, the position he now holds.

Atlanta, Ga., Rate Case Before Court Again

Atlanta, Ga.—The question of whether the Atlanta Gas Light Company can charge a maximum net rate of $1.65 per thousand cubic feet for gas, or must confine itself to the rate of $1.55, ordered by the State Public Service Commission, will be definitely decided as the outcome of a hearing just begun in the Federal District Court here.

The case will be heard for the first time on the merits of the original petition filed by the Atlanta Gas Light Company in 1921 in an effort to prevent the enforcement of the $1.55 rate ordered by the Public Service Commission.

The gas company contends that the rate of $1.55 net per thousand cubic feet is confiscatory, in that it does not allow a fair return on the valuation of the company's property. This valuation the company places at $8,250,000.

The Public Service Commission, which on January 1, 1922, established a valuation of $5,250,000 on the same property, now places the valuation at $5,850,000, the increase being due to the fact that more than $600,000 has been put into the property since its 1922 appraisal.

It is upon this point of valuation that the question of rates will hinge.

The situation, however, is more or less complicated. In 1921 the Public Service Commission ordered a 10-cent reduction in the gas rate throughout the territory served by the Atlanta Gas Light Company. The new schedule was to have gone into effect January 1, 1922, but the gas company filed a petition for an injunction to prevent the enforcement of the new schedule.

The injunction was denied in the Federal court, when a supersedeas was taken and the company posted a bond of $100,000 as a guarantee that it would refund to its customers the difference between the new low rate and the old rate, which was permitted to stand pending the outcome of the litigation.

The old rate, therefore, remained in force, and the gas company carried the matter on up to the United States Supreme Court, which a few months ago handed down a decision adverse to the gas company and ordered a refund to the customers who had been paying the old rate of $1.65 per thousand cubic feet.

The Supreme Court, however, remanded the case back to be tried on its merits—and that is how-come the case has come up for hearing again when every one thought it settled once and for all.

The present litigation will follow the regular channel of court procedure. A. J. Luick of Chicago, Ill., the engineer who made the valuation for the company in 1921, will be the chief witness for the gas company, and Professor Riggs and Professor Jenson, of the University of Michigan, who appraised the property of the gas company for the Public Service Commission, will be the principal witnesses for the Public Service Commission.

If the gas company wins the case it will have the right to charge its old rate of $1.65, but cannot collect the refunds recently mailed out to consumers. In other words, the present rate affixed by the commission will stand unless the Federal court decides that the company has the right to restore the original rate at a later date, but the order will not affect collections in the meantime.

In case of an appeal from the decision of the Federal court, the case may be taken once more to the Supreme Court of the United States, in which case the decision of the Supreme Court will be final and the question of this particular change in rates cannot come into court again.

Plans to Lay 60,000 Feet of New Mains

An extensive main laying program has been decided upon by the Allentown-Bethlehem Gas Company, and they have awarded the contract to the U. G. I. Contracting Company of Philadelphia, to provide material and make the installation.

The work will consist of laying about 68,000 ft. of 8 in. steel welded, high pressure main, and about 24,000 ft. of 2 in. main, together with many feet of lateral lines.

Gas Company Official Re-elected President of W. Pa. Division National Safety Council

An appointment of direct interest to the Philadelphia company and to the gas industry is that A. W. Robertson, vice-president and general attorney of the Philadelphia Company, Pittsburgh, Pa., was again elected president of the Western Pennsylvania Division, this making his third term. In addition, J. V. Long, advertising manager of the Equitable Gas Co., was made vice-president in charge of publicity. C. G. Rice, of the Pittsburgh Railways Co., and W. H. Boyce of the Beaver Valley Traction Co. were made members of the board of directors.

In outlining the program for the future, Mr. Robertson spoke of the development of a Public Safety Division through which it was proposed to assist the governing officers of municipalities to enforce safe purposes upon thoroughfares, to keep the general public advised of the various dangerous conditions and customs which demand public attention, to stimulate safety instruction in public schools, to advocate and urge legislation to assist the cause of safety, and in other ways to assist materially in reducing accidents in the district.

H. C. Blackwell Accepts Position With Union Gas & Elec. Co.

Kansas City Mo.—H. C. Blackwell, vice-president and general manager of the Kansas City Power & Light Co., affirmed his decision to accept an offer to go to Cincinnati as vice-president and general manager of the Union Gas & Electric Co.

Renewed efforts had been made to hold Mr. Blackwell in Kansas City to head the local company under the new owners.

To Install New Tar Extractor

To take care of the increased demand in its plant, the Atlantic City Gas Company has placed an order with the U. G. I. Contracting Company of Philadelphia for tar extracting apparatus having a daily capacity of 6,000 M. cu ft.

Consolidated Gas Co. of New York Issues Annual Statement

Combined Balance Sheet, Consolidated Gas Company of New York and Affiliated Gas and Electric Companies December 31, 1923, Compared with December 31, 1922.

ASSETS

	Dec. 31, 1923	Dec. 31, 1922	Variation
Plant and equipment (incl. land)	$503,109,905.76	$460,342,880.79	$42,767,024.97
Investments	6,446,237.03	6,505,753.39	59,516.36
Cash	8,739,040.40	13,816,273.93	5,077,233.53
Accounts receivable	17,561,369.30	18,877,921.14	1,316,551.84
Materials and supplies	17,338,033.28	13,249,439.67	4,088,593.61
Total	$553,194,585.77	$512,792,268.92	$40,402,316.85

LIABILITIES

Capital stock outstanding, Consolidated Gas Co.:			
Common (a)	$178,224,965.96	$135,372,120.00	$42,852,845.96
Preferred (b)	14,694,738.50	.....	14,694,738.50
Affiliated companies (c)	998,350.00	998,350.00	.....
	$193,918,054.46	$136,370,470.00	$57,547,584.46
Funded debt	120,491,790.00	120,492,432.50	642.50
Unfunded debt (d)	13,140,643.06	46,489,877.18	33,349,234.12
Accounts payable and accrued charges	15,322,418.62	14,866,793.06	455,625.56
Reserve for retirements and insurance	10,836,120.62	11,931,575.64	1,095,455.02
Reserve for contingencies	55,016,202.26	55,016,202.26	.....
Stock and bond premiums	38,072,236.04	38,085,397.04	13,161.00
Gas sales suspense (e)	2,257,336.99	.....	2,257,336.99
Surplus	104,139,783.72	89,539,521.24	14,600,262.48
Total	$553,194,585.77	$512,792,268.92	$40,402,316.85

(a) 3,562,803.96 shares, no par value, Dec. 31, 1923.
(b) 293,894.77 shares, par value $50, Dec. 31, 1923.
(c) 9,963.50 shares, par value $100, Dec. 31, 1923.
40.00 shares, no par value, Dec. 31, 1923.
(d) Includes consumers' deposits ($5,708,514.19) and disputed taxes ($3,528,828.87),, Dec. 31, 1923.
(e) Amount of gas sales, resulting from the excess in the price charged for gas, by the Consolidated and its affiliated Gas Companies, in the City of New York, above the statutory rate of one dollar per thousand cubic feet, not included in the earnings pending the termination of the proceedings in the Federal Court.

Combined Earnings Statement for the Calendar Year 1923 Compared with the Corresponding Period 1922.

	1923	1922	Variation
Gross earnings, including miscellaneous operating and non-operating revenue	$123,741,998.27	$113,086,372.25	$10,655,626.02
Operating and non-operating expenses including retirement expense and taxes	87,933,227.84	81,258,742.73	6,674,485.11
Net Earnings	$ 35,808,770.43	$ 31,827,629.52	$ 3,981,140.91
Interest on funded and unfunded debt	7,555,520.75	9,954,831.21	2,399,310.46
Surplus earnings	$ 28,253,249.68	$ 21,872,798.31	$ 6,380,451.37
Dividends paid:			
On Consolidated Gas Company's common stock	$ 14,883,785.00	$ 8,525,597.00	$ 6,358,188.00
Preferred stock	508,152.65	.....	508,152.65
On affiliated companies' stock	47,813.00	37,003.00	10,810.00
Total dividends paid	$ 15,439,750.65	$ 8,562,600.00	$ 6,877,150.65
Balance carried to surplus acc't.	$ 12,813,499.03	$ 13,310,198.31	$ 496,699.28

A combined statement of the assets and liabilities of the Consolidated Gas Company and its affiliated Gas and Electric Companies has been prepared as of December 31, 1923, together with a combined statement of the revenues and expenses of these companies, for the calendar year 1923, with all inter-company items eliminated. To these statements have been added a combined surplus account and a combined summary of financial transactions for the year of the companies.

It will be observed from the combined balance sheet, showing the assets and liabilities, that the total amount of the capital stock of the affiliated companies in the hands of the public, amounts to only one-half of one per cent. of the total amount of capital outstanding.

Gas Co. to Spend $750,000 in 1924

Houston, Texas—The Houston Gas & Fuel Co. Thursday filed with C. J. Kirk plans for expenditure of $750,000 this year.

Many extensions and increase in capacity of plant to prevent any future gas shortages are contained in the plans.

To Install Three-Part Gas Rate Equipment

Salem, Kan.—Work has started on the installation of demand-limiting meters, pressure registers and other three-part rate equipment which must be installed on each customer's service line, it was announced by H. S. Warner, general manager for the Salina Light, Power & Gas Co. A crew of 15 men is doing this work.

Company Gets 25-Year Grant in Iowa

The American Gas Company, which has a subsidiary plant at Waterloo, Ia., has been awarded a 25-year franchise there at a referendum ballot.

The Waterloo company is controlled by the same eastern corporation owning the Rockford Gas Light & Coke Company. The Waterloo City Council, there being no State Public Utility Commission in Iowa, refused to grant a renewal of the franchise, submitting it to a vote of the people. There will be no change in rates.

Well Known Gas Engineer Dies

Mr. William W. Randolph, a nationally known consulting engineer, died on Wednesday, January 23, at his home at 146 Prospect street, East Orange, N. J., after a long illness.

Mr. Randolph was born in King George County, Virginia, in 1864. The interment was in Clark County, Virginia.

He was educated at the University of Virginia and Stevens Institute of Technology, from which institution he graduated in 1886 as mechanical engineer.

After graduation he was for about four years in railroad construction and in city and U. S. Government surveys. In 1890 he entered the gas and electric field as construction engineer with the United Gas Improvement Company of Philadelphia and later as assistant to the chief engineer of the company. In 1894 he severed this connection and joined forces with the firm of Humphreys & Glasgow (who were constructors, operators and consultants) as chief engineer and later as vice-president of Humphreys & Glasgow, Inc. After about fifteen years' association with this organization, he resigned in 1910 to enter the same field for himself, and continued his business until his death.

Mr. Randolph was a member of the Engineers Club of New York, the American Gas Association, the Southern Gas Association, the Pacific Coast Gas Association, and was president of the Fayetteville Light & Power Co., of Fayetteville, N. C.

His standing as an engineer was high and his death is a distinct loss to the profession.

Mr. Randolph leaves a widow, two sons and a daughter.

Chas. H. Stone Dies

Buffalo, N. Y.—Charles H. H. Stone, well known in the East as a chemist, died January 27 at a Rochester, N. Y., hospital, following an operation performed more than a week previous. Mr. Stone was considered an expert on manufactured gas and at the time of death was director of the chemical laboratories of the Rochester Gas & Electric Corporation, which position he had held for the last five years. He was 47 years old.

C. M. Benedict Elected President of Des Moines Gas Co.

C. M. Benedict, vice-president of the Des Moines Gas Company, has been elected president, to succeed Jansen M. Haines, who is retiring from the utility business.

H. R. Sterrett was elected a member of the board of directors and manager of the company.

Company Gets 25-Year Grant in Lynn G. & E. Employees Open New Club Rooms

New club rooms of the Lynn Gas & Electric Employees Association in the Laxton building, 112 Broad street, were fittingly and officially opened, January 23, with a banquet and program of entertainment, with workers and officials of the company joining together in the jollification.

The new quarters of the employees' association, fitted and furnished completely by the company, reflected the spirit of harmony existing at the large plant.

Francis E. Drake, superintendent of the gas division of the company, acted as master of ceremonies. At the conclusion of a most enjoyable catered banquet, he made a few brief remarks, introducing officials and employees as the speakers. He called the attention of the 300 men back a period of ten or twelve years, when the association was started in a dingy hall on Union street. Now the association is quartered in spacious well-lighted rooms.

Henry K. Morrison, general manager of the company, was introduced amid three rousing cheers and a "Buffalo" by the rooters of the leading bowling team. Morrison expressed the hope that the new club rooms will be a source of amusement and pleasure and also a source of benefit to all employees. With a few words of welcome he turned the floor over to the popular treasurer, Hon Eugene B. Fraser.

Mr. Fraser spoke briefly on the relations between officials of the company and employees and invited the presentation of grievances through the medium of officers of the employees' association. With a few words of advice about keeping the club rooms in good condition, he presented the "key" to the association rooms to John H. Curtin, president of the association. The "key" was of wood decorated with a large red bow. Fitting response was made by Mr Curtin.

An entertainment followed, supplemented by community singing led by Francis E. Drake and Henry Laummann. "Billy" Anderson, one of the veteran gas men, started off festivities with the singing of "Old Black Joe." Jim O'Brien, popular lineman, also helped the cause along with a vocal selection, as did Raymond Murray. E. T. Bennett, radio expert, gave a concert with use of a new style radio set.

Capt. Williams, of the Lewis street engine house, was one of the chief entertainers with his magic tricks and electrical features. Assisted by Frank Dowling, formerly with the Ethel May Shorey Stock Company, several unusual feats were performed by the use of a high frequency electrical apparatus.

The new rooms next to the general office on Exchange and Broad streets, are completely furnished. Pool and billiard tables, lounging room, reading and card rooms, kitchen, toilet and bath, cloak room and a bowling alley in the basement. The bowling alleys will not be completed until March 1, after which time all matches for championship of the plant will be staged there.

The house committee in charge of the new quarters is: John H. Curtin, president; Henry Laummann, vice-president; Edward Martin, secretary, and James L. O'Brien, Charles Rogers, Charles Fletcher, Thomas Riley and Isaac Carkin.

Guests at the head table during the banqeut were Eugene B. Fraser, treasurer; Henry K. Morrison, general manager; Francis E. Drake, J. Frank Dubois, John H. Curtin, I. A. Patten, F. W. Mace, H. I. Laummann, John T. Queeney and C. E. Bryant, representatives of the General Electric Company.

Current Market Prices

COALS (By Courtesy of Coal Age)

A. Bituminous.

(Spot prices, F. O. B., mines, net tons).

High Volatile, Eastern	Market	Price
Pool 54-64 (Gas Standard))	New York	$1.50 to $1.75
Pittsburgh screened gas	Pittsburgh	2.50 to 2.65
Pittsburgh gas, mine run	Pittsburgh	2.25 to 2.35
Kanawha lump	Columbus	2.50 to 2.75
Kanawha mine run	Columbus	1.50 to 1.75
West Virginia lump	Cincinnati	3.00 to 3.25
W. Virginia gas mine run	Cincinnati	1.65 to 2.00
Midwest		
Indiana 4th vein lump	Chicago	3.00 to 3.25
Indiana 4th vein mine run	Chicago	2.50 to 2.75
South and Southwest		
Big Seam lump	Birmingham	3.75 to 4.00
Big Seam mine run	Birmingham	1.75 to 2.15
Southeast Kentucky lump	Louisville	3.00 to 3.50
Southeast Kentucky mine run	Louisville	1.65 to 2.00

B. Anthracite.

(Spot prices F. O. B. mines, gross tons),

Market	Freight rates	Independent	Company
Egg New York	$2.34	$8.50 to $9.25	$8.75 to $9.25
Egg Philadelphia	2.39	8.50 to 10.00	8.75 to 9.25
Egg Chicago (net tons)	5.06	7.50 to 8.80	8.00 to 8.35

COKE (By Courtesy of Iron Trade Review).

Connellsville, furnace	$3.75 to $4.25
Wise County, furnace	5.00 to 5.75
Alabama, furnace	5.00 to 6.00
Foundry, Newark, N. J., del.	10.91
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.50
Foundry, Granite City, Ill.	12.50
Foundry, Alabama	5.00 to 6.50

PETROLEUM (By Courtesy of Oil, Paint & Drug Reporter)

(Prices at wells, per bbl.)

Pennsylvania—Ohio—West Virginia.	
Cabell, West Virginia	$1.80
Corning, Ohio	1.65
Lima	1.93
Pennsylvania	3.75 to 4.25
Wooster, Ohio	1.80
Indiana—Illinois.	
Illinois	1.72
Indiana	1.73
Oklahoma—Kansas.	
Healdton	.90
Mid-continent (low gravity)	.75 to .90
Gulf Coast.	
Gulf Coast, Grade A	$1.50
Gulf Coast, Grade B	1.25
Pierce Junction	.65

GAS OILS.

Gas Oil, Bayonne, bulk gal.	5 to 5¼c
Gas Oil (32-36) Illinois-Indiana, gal.	3¼ to 3½c
Gas Oil (32-36) Oklahoma, gal.	3⅛ to 3¼c
Gas Oil (32-36) Gulf Coast, gal.	4½ to 5 c

PIPE AND FITTINGS—CAST IRON GAS PIPE.

(By Courtesy Iron Trade Review.)

Four-inch, Chicago	$66.20 to $67.20
Six-inch and over, Chicago	62.20 to 63.20
Four-inch, Birmingham	56.00 to 57.00
Six-inch and over, Birmingham	52.00 to 53.00
Four-inch, New York	70.60 to 71.60
Six-inch and over, New York	65.60 to 66.60
Standard fittings, Birmingham, base	115.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20.

BY-PRODUCTS

(By Courtesy of Oil, Paint and Drug Reporter)

Ammonia aqua, 16 deg. drums lb.	5 to 5½c
Ammonia aqua, 20 deg. drums lb.	6¼ to 7 c
Ammonia aqua, 26 deg. drums lb.	7 to 7½c
Ammonia squa, anhydrous cylinder, lb.	30 to 36 c
Ammonium sulphate, bulk F. O. B. Works, per 100 lbs.	$2.90 to $3.00
Potash prussiate, yellow casks, lb.	22 to 22½c
Potash prussiate, red casks, lb.	45 to 48 c
Soda prussiate, yellow casks, lb.	13 to 13½c
Soda sulphocyanide, barrels, lb.	45 to 55 c

COAL TAR BASIC PRODUCTS.

(By Courtesy of Oil, Paint and Drug Reporter)

Benzol C. P. tanks, works, gal.	23 to 28c
Benzol, drums, gal.	28 to 33c
Benzol, 90% tanks, works, gal.	21 to 26c
Benzol, 90% drums, gal.	26 to 31c
Napthalene, flake, barrels, lb.	6¼ to 7c
Napthalene, crushed bags, lb.	5½ to 6c
Solvent Naphtha, water white works, gal.	27c
Solvent Naphtha, drums, works, gal.	32c
Solvent Naptha, Crude Tanks, works, gal.	24c
Solvent Naphtha, drums, works, gal.	29c
Toluene, C. P. tanks, works, gal.	26c
Toluene C. P. drums, works, gal.	31c

Coal inquiries are increasing but buyers are displaying caution in placing orders, waiting the outcome of the miners' convention at Indianapolis. Production is heavy, the coal going to the stock pile or on contracts. Coal buying by utilities is heavier and heavier consumption of gas has resulted in an active demand for gas coals. Coke prices remain unchanged.

Petroleum prices at the well are increasing, resulting in a corresponding increase in the price of gas oil. The movement is general throughout the country.

Of the by-products ammonia sulphate prices are higher, all others remaining unchanged.